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H. B. McMEAL, PRESIDENT AND EDITOR — F. S. KENFIELD, VICE-PRESIDENT — H. D. FARGO, SECRETARY AND TREASURER
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J. R. HASTIE, Advertising Manager — E. KLAPPENBACH, Asst. Advertising Manager — W. E. RAYMOND, Subscription Manager

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An Attractive and Effective Advertisement.

A recent issue of TELEPHONY described the use of moving pictures as a means for acquainting the public with the telephone business and the methods by which connections are made between parties. Another film entitled "Spinners of Speech," has recently been exhibited in the East, and during the past two weeks has appeared in the moving picture theaters in and around Chicago. It is a film produced through the co-operation of the American Telephone & Telegraph Co. and Pathe Freres, and shows construction and operating methods in addition to giving statistics regarding the present bigness of the telephone industry.

A feature of the film is picturing the making of long distance connections between a mine in Colorado and a hotel in New York, whereby the mine superintendent talks with the president in New York. The film shows the superintendent originating the call at a local battery magneto set at the mines; its reception at the toll switchboard in Denver; the passing of the call on to Omaha, the passage, being, graphically indicated on a large map of the United States, by a desk telephone moving across the country to Omaha, from where connection is made to the outgoing circuit extending to Chicago.

From the Chicago switchboard the desk set is pushed on to Buffalo and then through another board to the New York central office. At this point connection is made with a private branch exchange located in one of the large New York hotels. The operator at this board is shown receiving the call, and giving a ticket to a bell boy for paging the president of the mining company. The boy delivers the message to the president on a satirway who then goes to a long distance booth located beside the private branch exchange board. The two men are then shown talking to each other with satisfactory results, judging from the expressions on their faces.

Another part of the film which is interesting, shows the rapidity with which telephone lines were extended throughout the United States. A map of the United States is thrown on the screen and then in different sections, desk sets appear, slowly at first and then more rapidly until the entire map is covered. Another section of the film shows some of the pioneer work being done in line construction and the evolution of the line into the modern 600-pr. cable.

The film is decidedly instructive and should be productive of much good to the telephone industry in familiarizing the public with the many operations essential to the furnishing of telephone service. Reaching as it does a great mass of people, the moving picture undoubtedly will greatly aid, indirectly it is true, in showing the possibilities of the telephone as the most rapid space annihilator of modern times.

Working With a Will.

It is pretty hard to condemn or be angry with the man who is doing his best, even if he doesn't quite succeed. There is enough charity in the human race to induce nine out of ten people to say: "Well, he tried hard; he did the best he could, and he ought to be given credit for that, even though he did fall down partly." Whatever is one's daily work—running a telephone exchange, preaching sermons, planting and harvesting crops, writing funny stories, or playing baseball—it should be done earnestly, honestly, and sincerely. "Angels could do no more." The man who puts the best there is in him into his day's work can be content to leave the result to the powers that be. In the nature of things, he who does the best he can is nearly always sure to succeed. Most failures are due to neglect of laws of sincerity, earnestness and thoroughness.

The exchange manager who convinces the people that he is doing his utmost to supply them with the best possible telephone service, will be surprised to find how considerate the public will be. The chances are this consideration will be due, primarily, to good service, for even the most stubborn conditions yield to conscientious, painstaking effort, but, anyway, the knowledge that one is doing the best he can goes a long way to excuse the mistakes that may creep in. Do the best you can at all times, and the battle is more than half won. If you don't, the fault will certainly be on your head if the battle is lost.

The Practical Value of Civility

By HERBERT KAUFMAN

It requires more than mere money's worth to satisfy a customer. Business cannot be completely organized like a machine. The day will never come when folks will be satisfied simply with honest value.

Personality is essential to every organization. Human nature demands a smile and "thank you" as extra measure.

Sentiment plays a tremendous part in determining profits and losses. Good will is a more valuable asset than good plants and good plans.

Whenever a consolidation of industries occurs, whenever a long established concern passes into new hands, sums of money often exceeding the amount laid down for realty and equipment, are demanded for the close bond of friendship which has gradually grown between the merchant and the trade.

We all form our prejudices and we esteem them fondly. Every man has a profound dislike for some shop, some corporation, some hotel, or railroad, because of an unpleasant experience with a proprietor, an official or an employe.

Fortunes can't be built out of shrewdness alone. Brilliant intellects are discounted by a surly disposition or a strain of petty meanness. Little things destroy big opportunities. Individuals can only advance a limited distance toward prosperity.

All games that can be played by a lone hand are a sheer gamble. Unusual success necessitates a following and the public will only support an ungracious man or management until a more appreciative rival can be located.

Competition is dragged into existence by the protesting voice of dissatisfied community or neighborhood.

Men and women will put up with personal inconvenience rather than patronize institutions which have courted their hostility. The public can neither be damned nor dammed. You can't build a permanent dike around any set of patrons. Even thrones are overturned by organized dislike.

If you serve in any capacity, it is part of your job to exhibit gratitude for favors. You are being paid a profit for your wares, your facilities, your faculties and your time, and, even if you do occasionally encounter an unreasonable human, it is no less than common sense to meet rudeness with self control. Even if you come out best in an argument with a "kicker," you are bound to emerge from the row with the worst of it.

Thereafter you cannot reach the vindictive individual, but your greater prominence and exposed position afford him opportunities to divert custom and inflict harm in untold ways.

Every one of your employes is at times proprietor by proxy.

Few of us pause to differentiate between an obnoxious underling and his chief when insulted or rebuffed.

It is not the directly guilty upon whom resentment focuses, but you—the supreme head—are blamed—and rightly so.

Wherever employes fail to regard the common rules of breeding and civility, it is because no rules for the treatment of buyers have been established and maintained.

The most competent mechanism will quickly fall into ruin unless well lubricated. Oil is a cheap insurance on the efficiency of machines and courtesy is as indispensable to commerce.

Print this line on your pay envelopes:

"We Expect to Pay Our Dividends with Your Smiles."

Copyright by Herbert Kaufman.

Morgan Properties in Indiana Active Competitors of Bell?

Indianapolis and New Long Distance Companies to go After Business—Companies' Equipment Being Improved and All Conditions Point to Beginning of New Era of Active Competition in Indiana—Company Officials Do Not Confirm or Deny Reports

There is strong indication, writes TELEPHONY's Indianapolis correspondent, that the Indianapolis Telephone Co. and the New Long Distance Telephone Co. will go into active competition with the Central Union Telephone Co. for local and long distance business. The Independent company management is building a new downtown and a new branch exchange in Indianapolis, both calling for an outlay of close to $100,000.

Since the Independent companies in Indianapolis were bought by the Morgan interests it has been the belief of those in touch with telephone matters that they were being managed in a non-aggressive manner in acquiescence with the Bell interests, which were prevented from taking over the companies by merger because of the Sherman anti-trust law.

The situation in Indianapolis seemed to bear out this belief. The Bell interests were aggressive in going after business, and spent money freely in bringing the service up to a high grade of efficiency. The Independent companies on the other hand, lagged, and seemed to view the bounding advances of the rival company with indifference. By appraisal recently completed for the Indiana Public Utilities Commission, the Bell company is credited with having 33,000 stations. The new company claims 15,000. Once the companies stood on practically an even basis, with the Independent company credited by popular verdict, with giving the better service.

But within the past month a change has come over the situation. What may be back of the new policy of the Independent companies is not being made public by the management. Since the anti-trust suit against the Bell combine on the Pacific Coast the feeling has gained ground that the Morgan controlled companies will be operated in active competition with the Bell company.

C. S. Norton, the secretary of the Indianapolis local and long distance Independent companies, would not confirm or deny that the company intended to become a real competitor, saying:

"Without regard to the attitude of any other company, we are going after business."

This is the only statement that will be made by the Independent company officials. But they admit the company's equipment is being improved, and that the new four-story building in the rear of the present downtown exchange is to have floor space for an exchange that will rival in efficiency and completeness anything in the state. The third floor of the new building is to be devoted to exchange purposes, and it will have 4,000 square feet of floor space. The company expects to be in position to use the new building by January 1. The work is being pushed rapidly, and it is quite probable that the present exchange will be abandoned as soon as a new one can be put in operation. On this point, officers of the company are making no statement, apparently through fear they will be construed as admitting the present exchange is inefficient.

"We have no idea of scrapping a board that is giving good service. When the time comes when it seems advisable we will have the new building to fall back upon," was a statement made by Mr. Norton to TELEPHONY's representative.

California Commission Rules Against A. T. & T. Payment

Opinion in San Jose Case Affecting Pacific Telephone & Telegraph Company Analyzes Values for Rate Making Purposes—6½ Per Cent. Depreciation Too High—Payment of 4½ Per Cent. of Gross to Parent Bell Excessive

As briefly reported in a previous issue of TELEPHONY the Railroad Commission of California has ruled, in the case of the city of San Jose vs. the Pacific Telephone & Telegraph Co., as follows: That the practice of the telephone company in requiring deposits before installing telephones, is unjust, unreasonable and discriminatory; that the rates complained of in the San Jose exchange area are unjust and unreasonable, and the company is ordered to adopt a schedule of rates fixed by the commission for San Jose, Santa Clara, Sunnyvale and Campbell exchanges; that a 6½ per cent. depreciation fund is too great, a depreciation fund of 5½ per cent. being allowed until such time as this amount is shown to be too high or too low; that payment of 4½ per cent. of gross revenue to the American Telephone & Telegraph Co. is excessive and not a proper expenditure, and that the latter charge must be limited to the lowest fair value of the service actually rendered by the American company, which in this instance, is fixed at 2½ per cent.

The case of the city of San Jose was filed with the commission on April 8, 1913, and hearings were held on July 14 and 15 and on September 16. The opinion is rendered by Commissioner Eshleman. In addition to the evidence taken at the hearings, the commission's experts made an investigation of the property values and rate conditions in the exchange area in question, and there were various items in which there was considerable difference of opinion between the engineers of the commission and those of the telephone company.

For example, in its property statement the company included an item of $26,892 which represented the value it placed on a building owned by it but not now in use, in which its offices were previously located. It was shown that this building had no place in the present operations of the company, but it was urged that this valuation should be allowed because the company had not yet disposed of the building and until it was able to do so should be allowed an earning thereon. It was contended that failure to permit such earning would in effect penalize the company for its willingness to enlarge its plant to provide facilities for serving the public adequately. This argument was set aside by the commission with the observation that it could not admit that non-operative property added to the value of the property devoted to the public use, as such an admission would make all kinds of abuses possible. The commission also set aside an item of $8,635 which the company in estimating the value of its new building had added to the price actually paid the contractor, the company contending that the indirect expenses necessarily involved and the fact that the contractor lost money on the job, warranted this addition.

DIFFERENCES BETWEEN COMMISSION'S AND COMPANY'S FIGURES.

There was a further difference between the commission's engineer and the engineers for the company in respect to central office equipment, of $1,843, the former taking the actual

indirect expense as shown by the figures of the auditor, and the company's engineers making an estimate as to what such indirect expense should be. This contention of the company the commission also set aside. Another difference was an item of $4,639 in the valuation allowance for conduits now under pavements that were not laid at the time the conduits were placed. Referring to this difference the commission says:

"This difference of opinion between the engineer of the commission and the telephone company illustrates very forcibly the confusion which apparently exists in the minds of both the courts and the engineers between cost and value. Counsel for the telephone company seriously contends that the putting of pavements above conduits after they are laid represents an appreciation in the value of the property. Of course such is not the case, but when this condition exists, it certainly is true that the cost to reproduce the property in its present condition would be more than the actual cost incurred in the original production of such property. If cost of reproduction is to be the basis upon which rates shall be computed, the engineer of the commission, in my opinion, in this regard is wrong; while if value is to be considered as the courts have suggested, the engineers of the telephone company are wrong.

Basis for Fixing Rates.

As I suggested in Application No. 118, value as ordinarily conceived can not be used as a basis for fixing rates of a public utility, because the ordinary conception of value is that for which anything will sell, which, of course, is largely determined by the earning power of the agency in question. Cost of reproduction of a property is to be considered merely because it serves as an indication of what has been invested in the property, and not what the property is worth, as worth is generally understood. But holding the view that cost more largely determines the basis upon which rates shall be fixed, I can not reject the other elements which the courts have said we must consider, and do not propose to do so. Neither does this drive me to the conclusion which counsel for defendant reaches, that if we take cost as a basis upon which rates shall be fixed, no depreciation should be allowed. I am somewhat surprised that this should be urged seriously by the able counsel for this company. I believe it is just and equitable to allow a public utility a reasonable return upon the money wisely invested in a well conceived public utility, but to grant counsel's conclusion as being correct means that a utility could permit its property to wear out entirely and still be entitled to the same rates as though it were kept in first-class condition.

The source of the funds for producing a public utility property and for taking care of depreciation in such property is, and should be entirely different. The former should come from the owner of the utility; the latter should be taken care of out of rates. In other words, investment in a utility upon which the owner of such utility should be permitted to earn, is an investment in what is ordinarly called capital account. I am aware that this confusion exists, if not in the minds, at least in the practices of most public utilities. Under the latest decisions of the Supreme Court of the United States the present value of the property is to be considered in fixing rates and this means, as the court has said, the property in its present condition of depreciation. If, as the evidence shows here, the property of the telephone company has depreciated 15 per cent. on the average, then that amount should be deducted from the sum otherwise found as representing the value of the property to secure its present value, and while the investment of the company will be 100 per cent. the property will be 85 per cent. The difference, however, in this case is taken care of in a depreciation reserve.

In all cases in order to preserve the investment in a utility intact, the percentage which the present condition of the property represents to its condition new plus the percentage represented by the depreciation reserve should always be equal to 100 per cent. In short, as I have already suggested, the investment is maintained intact from a sufficient surplus in the rates over that which is necessary to maintain the property and take care of the fixed charges. This company recognizes this fact and strenuously contends for its right to set aside 6½ per cent. of the gross annually to take care of depreciation. While the engineer of the commission approves of this practice, he insists that the percentage is too high in that it is producing a sum considerably in excess of the amount necessary to take care of depreciation. This will be discussed, however, in another portion of this opinion.

Therefore, I do not believe that items such as this should be allowed under any theory of rate making, but I do believe, that they should appear in an engineer's cost of reproduction, which, as I have already said, does not lead me to conclude that items such as this should be allowed in making up the amount upon which earnings shall be permitted. Suppose we are considering a public utility, as is often the case, where the condition under which the original expenditure was made is not known. With reference to such utility, we attempt to reproduce cost conditions by getting the cost to reproduce the property in its present condition and deduct therefrom such amounts as are found to be necessary by reason of depreciation in property and to get thereby what the engineers call "present value," which is not value at all but which has as its primary conception cost. Such present value is often misleading and does not reproduce the actual conditions we are seeking to reproduce, because of the very fact, as illustrated by this dispute between the engineers here, that estimated conditions of original construction are reached and not actual conditions.

My disposition is to disallow this item, but I do so neither on the theory of the company nor our own engineering department, for the reasons hereinbefore just discussed.

In reference to the inclusion in labor cost going into capital account of amounts properly chargeable to maintenance, the defendant urges that it is not right to eliminate these items because other items that were checked in the company's statement were found to be correct. The testimony of the commission's engineer is that only those items which from an inspection appear to be excessive, were investigated and that the amounts eliminated were eliminated from the excessive items only.

Method of Arriving at Present Value.

The difference of opinion between the engineers here is due not to different theories but to different application of such theories. It is urged by the defendant that the experience upon which the commission's engineer bases his conclusion, covers too short a period to be determinative of the proper amount of depreciation. It is urged that a certain amount in addition to that which the history of a utility shows has been lost by depreciation should be added as an insurance against calamity, obsolescence, etc. The cases of a great thaw in Portland causing the company $100,000 loss and the necessity of moving many miles of line on the right of way of the Northern Pacific Railway are cited as illustrating the necessity for a fund in the depreciation account in excess of that which the annual deterioration of the property would represent. I agree entirely with the theory of the defendant, but I am of the opinion that if sufficient time is taken over which depreciation is observed and within which time, under the theory of probabilities the average amount of calamity and obsolescence will occur, that the percentage thus obtained should be reasonably constant.

It is useless to urge that we can reach an exact conclusion as to the amount of depreciation to set aside annually, but we should attempt to determine this matter with sufficient accuracy to render justice to the utility, while at the same time

(*Continued on page 46.*)

The Use of Meters in Testing for Telephone Line Troubles

Practical Tests That Can be Made with Voltmeters and Milli-Ammeters—Circuits Used, Readings Taken and Formulas Applied—Illustrative Examples—Notes on Testing Gathered from Experience—Application of Tests and Circuits Summarized

By A. W. Clement

Testing with meters is not the most desirable method for locating troubles, but if there are no other instruments at hand it is necessary to grin and bear it, accepting reasonable errors as a matter of course. With cool application (carefulness will follow) of the formulae in this article, much satisfaction may be had. All possible formulae are not given, merely one per type or condition of trouble, those considered the best being selected.

The accompanying chart is a digest of the context and may be used for direct reference when shooting trouble. The first column contains reference numbers of the various tests; the second, a brief of the kind of test; the third, connections for voltmeters and mil-ammeters; the fourth and fifth, formulae for each type of meter; and the sixth, notes. Some general notes that may be of some use in filling gaps and smoothing over the rough spots are also given at the end of this article.

The following gives an explanation of the various tests summarized in the chart. The illustrative examples should make clear their application.

TEST NO. 1. MEASURING RESISTANCE OF LOOPS, APPARATUS, ETC.

VOLTMETER CONNECTIONS: A resistance, S, and a battery are connected in series with circuit to be tested.

READINGS. Two readings are taken; one across the resistance, the other across the circuit, calling them a and b.

FORMULA. Multiply b by S and divide by a, the result being the resistance of the circuit, or expressed by symbols,

$$R = \frac{bS}{a}.$$

EXAMPLE. Resistance $S = 100$ ohms, $a = 9$, and $b = 18$,

Then $R = \dfrac{18 \times 100}{9} = 200$ ohms.

BEST SET UP. The resistance S, for ordinary line work, should be about 100 ohms, its exact value, whatever it is, to be known.

MIL-AMMETER CONNECTIONS. A resistance, battery, and mil-ammeter are all connected in series with circuit to be tested. Arrange for means for short circuiting the resistance, S.

READINGS. Two readings are taken; one with S in circuit, and the other with it short circuited, calling them a and b.

FORMULA. Multiply a by S, and divide by the difference between b and a; the result is the resistance of the circuit, or in symbols,

$$R = \frac{aS}{b-a}.$$

EXAMPLE. Resistance $S = 100$ ohms, $a = 63.3$ and $b = 95$.

Then $\dfrac{63.3 \times 100}{95-63.3} = 199.7$ or about 200 ohms.

BEST SET UP. Resistance S, for ordinary line work, should be about 100 ohms, its, exact value, whatever it is, to be known. The battery should be in good condition, as the internal resistance is included in the measurements; the older the battery, the greater the resulting error.

TEST NO. 2. MEASURING INSULATION OF LINES, CONDENSERS, ETC.

GENERAL. The line wire under test should be open at the distant end, having all apparatus or other line wires disconnected from it. Carbons at both ends should be clean. If unable to have circuit opened at distant end and a drop without a condenser is across line at that point, both wires may be joined at home end, treating them as one wire during test, as explained later on. If the drop has a condenser, then the test may be made on each wire separately, as though it were open. Leaks in the office wiring and apparatus are liable to cause errors if the circuit is not opened at the entrance to the office, *i. e.*, at fuses, heat coils, etc.

VOLTMETER CONNECTIONS. Wire under test, voltmeter, and grounded battery should all be connected in series.

READINGS. One reading is taken, that of the voltmeter as above connected. If the earth potential is large (reading of voltmeter from wire directly to ground without battery), then take two readings; one regular and the other with the battery reversed, calling them x and y.

FORMULA. For small or negligible earth readings, let E be the battery voltage and G the meter resistance. Then multiply E by G, divide by a and subtract G. The result will be total insulation of wire tested, in ohms. If the wires are joined as mentioned, then multiply the result by two to get the approximate value for each wire. By symbols this would be

$$R = \frac{EG}{a} - G \text{ for the regular test.}$$

For earth current correction, divide twice the product of x and y by their sum, to get the correct value for a. Expressed by symbols this is $a = \dfrac{2xy}{x+y}$. This value is then used in the formula given above.

For insulation per mile, multiply the total insulation by the length of the circuit in miles. For megohms, in any case, divide the ohms by one million, or, point off six places to the left.

EXAMPLES. No earth readings, $E = 100$, $G = 15{,}000$, $a = 5$, and miles of wire $= 50$.

Then total ohms $= \dfrac{100 \times 15{,}000}{5} - 15{,}000 = 285{,}000$ ohms;

total megohms $= \dfrac{285{,}000}{1{,}000{,}000} = .285$ megohms.

Ohms per mile $= 285{,}000 \times 50 = 14{,}250{,}000$ ohms.

Megohms per mile $= \dfrac{14{,}250{,}000}{1{,}000{,}000} = 14.25$ or $14\frac{1}{4}$ megohms, the usual information sought.

For earth readings suppose $x = 4$ and $y = 6$;

then $\dfrac{2 \times 4 \times 6}{4+6} = 4.8$;

the value to be given a in the above formula, which would result in a total insulation of 312,500 ohms.

BEST SET UP. Battery should be 100 volts or more and the low scale of meter should be used. If several meters are on hand, use that one having the highest resistance for its low scale.

MIL-AMMETER METHOD. Measuring insulation with a mil-ammeter is not recommended, but where nothing else is available, it may be used fairly well for resistances of 100,000 ohms or less.

Connections, readings and formula are all the same as in Test No. 1.

EXAMPLE. Assume resistance S = 1,000 ohms, a = .893 milli-ampere, and b = .9 milli-ampere. Then,

$$R = \frac{.893 \times 1{,}000}{.9 - .893} = 128{,}000 \text{ ohms.}$$

In practice it is difficult to judge accurately the value of such low readings. For instance, in the above, reading a might have been judged to be .892 instead of .893. This would result in an apparent insulation of 111,500 ohms, a difference of about 17,000 ohms. It is for this reason that a mil-ammeter will not give good results in insulation tests, with ordinary testing voltages.

BEST SET UP. Use a 1,000-ohm resistance for S, higher if obtainable. The battery should have 80 or 100 cells—enough, anyway, to give a readable deflection of the meter with S in the circuit. Meter scales that read higher than 15 or 20 milamperes are of little use; the lower the scale values, the better. However, it would be poor policy to buy a low reading meter just for this test.

TEST No. 3, LOCATING CROSS OR TOTAL LINE FAILURE.

This test is used when no good wires are available.

VOLTMETER OR MIL-AMMETER CONNECTIONS. Same as for Test No. 1, using two wires which, while they may be grounded or crossed, or both, yet are not open to distant end.

READINGS. Make two complete measurements of resistance as in Test No. 1.

1.—With distant end short circuited, calling the result B.

2.—With distant end open, calling the result C.

Let A be the resistance of the loop to the distant end, as the records show for wires when good.

FORMULA. The loop resistance to the fault is found by subtracting from B, the square root of the product of the differences between A-B and C-B, or expressed by symbols.

$$R = B - \sqrt{(A-B) \times (C-B)}.$$

EXAMPLE. Resistance A is known to be 200 ohms, and by test, B is found to be 84.3 ohms, and C, 120 ohms. Then the difference between A and B = 115.7, and the difference between C and B = 35.7, while the product of these differences is 4,130.49.

The square root of the product is 64.3 and this subtracted from B leaves 20, the loop resistance to the fault.

BEST SET UP. Same as for Test No. 1.

TEST No. 4. FOR LOCATING GROUNDS OR CROSSES.

In this test one good wire is assumed to be available.

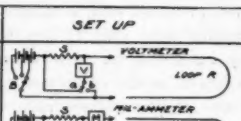
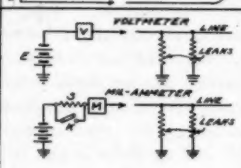
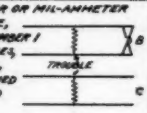
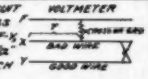
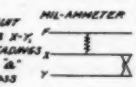
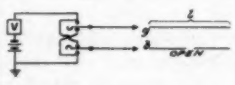
CONNECTIONS. Call the good wire y. Then in case of a cross, loop y, at distant end, to either side of the circuit in trouble, calling that side x, and let F represent the other side. For a ground, x = bad wire, y = good wire, and F = the ground.

VOLTMETER READINGS. With connections as for Test No. 1, take only the a readings (across S), as follows:

1. With test circuit across x and y, calling the reading L.
2. With test circuit across F and x, calling the reading X.
3. With test circuit across F and y, calling the reading Y.

Let E be the battery voltage.

FORMULA. Multiply the sum of L and X by Y; subtract

TEST NO	TEST FOR	SET UP	FORMULA — VOLTMETER METHOD	FORMULA — MIL-AMMETER METHOD	NOTES
1	MEASURING STRAIGHT RESISTANCE		"a" = VOLTS ACRO S S.S (TO BE NEAR 100 OF "S") "b" = VOLTS ACROSS LOOP "S" = SERIES RESISTANCE "R" = LOOP RESISTANCE TO BE FOUND THEN $R = \frac{b \times S}{a}$	"a" = MILS. WITH "K" OPEN "b" = MILS. WITH "K" CLOSED TO BE NEAR 100 MILS. "S" = SERIES RESISTANCE "R" = LOOP RESISTANCE, TO BE FOUND THEN $R = \frac{a \times S}{b - a}$	VOLTMETER OR MIL-AMMETER "S" FOR GENERAL USE TO BE 100 Ω BATTERY TO HAVE ABOUT 80 GOOD CELLS, CONTROLLED BY SWITCH "B" CLOSE BATTERY CIRCUIT ONLY WHEN TAKING READINGS, AND OPEN IT BETWEEN READINGS.
2	INSULATION		"E" = BATTERY VOLTS "G" = RESISTANCE OF VOLTMETER "a" = READING OF VOLTMETER THEN WITH NO EARTH CURRENT OHMS, TOTAL = $R = \frac{E \times G}{a} - G$ OHMS, PER MILE = R ÷ ROUTE MILES MEGOHMS, TOTAL = R ÷ 1,000,000 MEGOHMS, PER MILE = $\frac{R \div \text{ROUTE MILES}}{1{,}000{,}000}$ IF EARTH CURRENTS EXIST, LET "a" IN ABOVE = $\frac{b \times X \times Y}{X + Y}$ WHERE "X" = REGULAR READING "Y" = READING WITH BATTERY REVERSED	"S" = SERIES RESISTANCE "a" = MILS WITH "K" OPEN "b" = MILS WITH "K" CLOSED THEN OHMS, TOTAL = $R = \frac{a \times S}{b - a}$ OHMS, PER MILE = R ÷ ROUTE MILES MEGOHMS, TOTAL = R ÷ 1,000,000 MEGOHMS, PER MILE = $\frac{R \div \text{ROUTE MILES}}{1{,}000{,}000}$ IF EARTH CURRENTS EXIST, NEGLECT THEM IF SMALL, AND DO NOT MAKE TEST, IF LARGE	MIL-AMMETER IS NOT TO BE RELIED UPON. IN VOLTMETER METHOD, A HIGH TESTING VOLTAGE, WILL DO MUCH TO MAKE EARTH CURRENTS NEGLIGIBLE
3	TOTAL LINE FAILURE ALL WIRES CROSSED, GROUNDED, OR BOTH, BUT WITH TWO WIRES (SAME GAUGE) NOT OPEN TO DISTANT END	VOLTMETER OR MIL-AMMETER FIND RESISTANCE, BY USING TEST NUMBER 1 OF ANY TWO WIRES, FIRST SHORTED, AND THEN OPENED AT DISTANT END 	"A" = RESISTANCE OF LOOP UNDER TEST WHEN GOOD (GET FROM RECORDS) "B" = RESISTANCE OF LOOP WHEN SHORTED AT DISTANT END "C" = RESISTANCE OF LOOP WHEN OPEN AT DISTANT END "r" = LOOP RESISTANCE TO FAULT THEN $r = B - \sqrt{(A-B) \times (C-B)}$	SAME AS FOR VOLTMETER METHOD	GOOD FOR ACTUAL WIRE TROUBLES, BUT NOT FOR TREE GROUNDS, ETC. TEST NUMBER 4 TO BE USED WHERE POSSIBLE
4	CROSS OR GROUND ONE GOOD WIRE AVAILABLE	WITH TEST CIRCUIT NUMBER 1 ACROSS POINTS X-Y, F-X & F-Y TAKE ONLY THE "a" READING IN EACH CASE  WITH TEST CIRCUIT NUMBER 1 ACROSS X-Y, NOTE "a" & "b" READINGS NOTE ONLY THE "a" READINGS ACROSS F-X & F-Y 	L = READING, SET ACROSS X-Y X = READING, SET ACROSS F-X Y = READING, SET ACROSS F-Y S = SERIES RESISTANCE E = BATTERY VOLTS r = SINGLE WIRE RESISTANCE TO FAULT THEN $r = \frac{ES(LY + XY - LX)}{2LXY} - \frac{S}{2}$	a = "a" READING } SET ACROSS X-Y b = "b" READING } X = "a" READING SET ACROSS F-X Y = "a" READING SET ACROSS F-Y S = SERIES RESISTANCE r = SINGLE WIRE RESISTANCE TO FAULT THEN $r = \frac{aS(XY + bY - bX)}{2XY(b - a)}$	BEST FOR GENERAL USE
5	OPENS OPEN WIRE TO BE CLEAR OF GROUNDS OR CROSSES TO OTHER WIRES		b = VOLTS THROW ON BAD WIRE g = VOLTS THROW ON GOOD WIRE l = LENGTH (FT OR MILE) GOOD WIRE X = DISTANCE (FT OR MILE) TO OPEN THEN $X = \frac{b \times l}{g}$	TEST CANNOT BE MADE WITH DIRECT CURRENT MIL-AMMETER	GOOD WIRE MAY BE LONGER OR SHORTER THAN BAD WIRES.

Summary of Practical Meter Line Tests With Full Information as to Their Application.

product of L and X, and multiply the result by the product of E and S; divide by twice the product of L, X and Y, and then subtract one-half of S; this will give the resistance of *one wire* to the fault. In symbols this would be:

$$R = \frac{ES\,(LY + XY - LX)}{2LXY} - \frac{S}{2}$$

EXAMPLE. Assume $L = 7.33$, $X = 10.48$, $Y = 5.64$, $E = 22$, and $S = 100$; Then

$$R = \frac{2200 \times (41.34 + 59.11 - 76.82)}{2 \times 433.253} - \frac{100}{2} = \frac{51{,}986}{866.506} - 50$$

$= 9.99$ ohms, or practically 10 ohms.

MIL-AMMETER READINGS. With connections as for Test No. 1, take readings as follows:

1. a reading of test across x and y; call it a.
2. b reading of test across x and y; call it b.
3. a reading of test across F and x; call it X.
4. a reading of test across F and y; call it Y.

FORMULA. To the product of X and Y, add that of b and Y, and subtract that of b and X; multiply by the product of a and S, and divide by the difference between b and a multiplied by twice the product of X and Y. This will give the resistance of *one wire* to the fault. Expressed in symbols this would be:

$$R = \frac{aS\,(XY + bY - bX)}{2XY\,(b-a)}$$

EXAMPLE. Assume $a = 66.0$, $b = 99.0$, $X = 94.3$, $Y = 50.8$, and $S = 100$; Then,

$$R = \frac{6600 \times (4790.4 + 5029.2 - 9335.7)}{2 \times 4790.4 \times 33} = \frac{3{,}194{,}004}{316{,}169} = 10.102 \text{ ohms,}$$

or practically 10 ohms.

BEST SET UP. For either voltmeter or mil-ammeter the set up is the same as for Test No. 1.

TEST NO. 5. LOCATING OPENS.

This test is used for location of opens in cables or line wires, using a similar wire of known length (longer or shorter) for comparison; is intended for voltmeters only.

CONNECTIONS. Meter to grounded battery, the free side of the meter to be connected to good and bad wires in turn, the wire not connected to be grounded.

READINGS. Upon connecting the meter to either wire, a certain "throw" of the needle will be noticed, being greater for the longest wire. Careful note is to be made of the throw of the needle for each wire, repeating a number of times and taking the averages to insure accuracy. Call the throw for the good wire g, and that for the bad one, b; let l be the length of the good wire, and x, that of the bad one, in any measure, feet, miles, etc.

FORMULA. The approximate length of the bad wire is then equal to b, multiplied by l, and then divided by g, or in symbols:

$$X = \frac{b\,l}{g}$$

EXAMPLE. On a line route, $b = 2$; $g = 10$; $l = 50$ miles. Then, $X = \frac{2 \times 50}{10} = 10$ miles to the open. Reference to the log book shows a submarine cable nine miles out. Then the trouble is most likely in the cable box at the distant end of cable.

BEST SET UP. Use as high a voltage as possible, in order to get good needle throws. The higher the resistance of the voltmeter, the better the resistance tending to prolong the throw. If possible, a ballistic (free swing, or undamped) meter should be used, the throws on such an instrument being much greater than those on the ordinary "portable" type, the latter giving short, quick jerks that are hard to read. Fortunate are they who have reflecting galvanometers of the D'Arsonval or Thompson types, these instruments permitting very close measurements to be made of any kind of trouble.

GENERAL NOTES. In the first place, do not expect too much, and in the second, expect still less. As mentioned in the beginning, the use of meters for testing is not perfect, but for the man who does not care to put much into special apparatus, they serve the purpose very well. Some of the ideal conditions for correct results are:

1. Accurate meters.
2. Large readings, so that small errors may be "swallowed up."
3. Close readings; that is, good judging of fractional spaces.
4. Where several readings are taken, the difference between each should be at least several scale divisions. This is not always possible.
5. Battery to be open, except when actually reading meters. This is done to prevent change of voltage (battery drop).
6. New cells in battery, except for insulation tests.

In making these tests it is suggested that a five-or six-point switch be used for controlling the battery, arranging it so that the first point cuts in one cell, the second four more, the third five more, etc. By this means the proper current may be obtained, starting from a low value, thus preventing many broken or bent needles. For tests with the voltmeter, the current should never be such that the voltage across the resistance S is greater than one-tenth of its resistance; in mil-ammeter tests, it should not exceed 100 mils (one-tenth ampere). Higher currents are liable to cause heat coil troubles, besides shortening the battery life.

A ½ ampere fuse in the battery circuit is advisable for preventing accidental shorts from hurting the battery; frequent "blows," though annoying, only serve to show the necessity for protection. A suitable battery for general testing, may be had from 30 cells, while for higher voltages, such as used in insulation tests, as many old cells, say 70, may be added as desired, their internal resistance being of small account in such tests.

Do not use an alternating current meter with ringing current for making insulation tests. Instances have been observed where such a test was attempted, and the tester was unable to explain why he had such a "leak," which was due to the cable capacity. An alternating current meter with direct current will give proper tests, if designed for use with both currents.

The best scales for general, portable use are the 15-150 voltmeter and the 150-1,500 mil-ammeter. The greater usefulness of a double scale instrument more than offsets the slightly greater cost. Meters to be permanently installed in regular test circuits, should be of the ballistic (free swing) type, and have at least 2,000 ohms resistance for each volt of the scale. A 5-50 scale is the best for this use, and should have about 10,000 and 100,000 ohms for each scale, respectively.

The effects of earth or foreign currents was considered in the selection of these formulae, and are as follows:

TEST NO. 3. Fault resistance, only, exists; it has no effect, practically.

TEST NO. 4. Earth, foreign currents, or fault resistance may exist in any degree, so long as the meter scale will take care of them. That is, the readings to be such as to be readable, neither too high nor too low.

Tests 1-2-5 are either not affected, or are taken care of elsewhere.

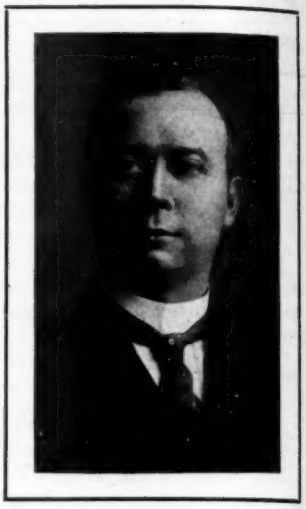
Sleet Storm Troubles Begin.

The telephone exchanges of Western Pennsylvania were visited on Sunday and Monday, November 9 and 10, with one of the heaviest snow and sleet storms in the memory of the oldest linemen. Poles, wires and cables came down in the general wreck. The snow was very damp and heavy and was followed by considerable wind.

A Quartet of Builders in the Telephone Industry

THOMAS I. STACEY, secretary and treasurer of the Electric Appliance Co., Chicago, Ill., was born in Bristol, England, on June 12, 1870. He came to the United States at a very early age and was educated in the public and high schools of Evanston, Ill. His business life began in 1883 with the Abbott Buggy Co., and a year later he took a position with the Central Electric Co., of Chicago. He remained with this company until 1890, occupying positions of increasing authority and responsibility. In 1891, with W. W. Low, he organized the Electric Appliance Co., of Chicago, and has been secretary and treasurer of this company since that time. He is very active in the affairs of his company and is also an ardent worker for the good of his community. He was for years a director of the Evanston Young Men's Christian Association, and is a member of a number of civic and social clubs as well as national and state scientific and engineering societies. He is a member of several important committees of the Association of Commerce of Chicago. His company has always been prominently identified with the Independent telephone industry of the country.

JOSEPH A. WILLIAMS, president of the K. W. Electric Co., Cleveland, Ohio, was born in Harris county, Georgia, in December, 1870, and received his education in one of the southern colleges. His principal studies were electrical and mechanical engineering. He then went to Cleveland and entered the employ of the Brush Electric Co. and worked through all departments of their factory. He then entered the employ of the Cleveland Electrical Mfg. Co., which did a large amount of electrical manufacturing and construction work. After being at the head of their staff of electricians for two years, he left the company's employ to engage in business for himself. In the summer of 1894 he founded the Williams-Abbott Electric Co. and in 1898 disposed of his interests in that company and founded the Williams Electric Co. and was president and general manager of the company. Mr. Williams is the inventor of many valuable improvements in telephony, now used in the Independent telephone field. He was among the first to begin the manufacture of Independent telephones. He is a great hunter and fisherman, and is prominent in Cleveland clubs.



ELSWORTH KEITH, supply sales manager of the Automatic Electric Co., Chicago, Ill., was born at Caracas, Venezuela, S. A., on December 15, 1889 and was educated at the Hinsdale, Ill., high school and at Beloit College. After leaving school Mr. Keith was engaged for a time in the testing laboratories of the Automatic Electric Co., after which he spent several years in the advertising field, with the Lord & Thomas agency. He re-entered the telephone manufacturing field in 1909 as supply sales manager of the Automatic Electric Co., and organized the supply sales department of this company. Mr. Keith has introduced a number of innovations, one of them being a system of trade marks by which the telephone supplies of this company, as for example, the Automatic Electric switchboard cord, are easily identified. Mr. Keith has been active in introducing and pushing the sale of the company's automatic monitoring system for increasing operator efficiency. He is the son of A. E. Keith, chief engineer of the Automatic Electric Co. He is a Mason and a member of various Hinsdale country clubs.

SEYMOUR GUTHRIE, secretary and treasurer of the Kellogg Switchboard & Supply Co., of Chicago, Ill., was born at Buffalo, N. Y., on June 19, 1864, and received his education in the common schools. Before entering the telephone manufacturing business he was employed by the West Erie Railroad, the American Express Co., and by Armour & Co., of Chicago. He began service with the Kellogg Switchboard & Supply Co., on December 1, 1901, as chief clerk in the accounting department, and continued in this position a period of 2½ years. In May, 1904, as a recognition of his ability he was promoted to the position of treasurer of the company, and three years later, in March, 1907, he was also made assistant secretary of the same company. After two years service as treasurer and assistant secretary, he was elected, in April, 1909, to the position of secretary and treasurer of the Kellogg Switchboard & Supply Co., in which capacity he has continued to serve to the present time. Mr. Guthrie is a member of the Hamilton Club of Chicago. He is interested in golf and is a member of the Riverside Golf Club.

For Humanity's Sake

Monopoly's Defense—The Last Ditch, Etc.

By J. C. Kelsey

I hardly like to comment upon the affairs of big business. It is presumptuous; besides, I have been reminded by a certain press bureau that the ways of big business were as a sealed book, and that an ordinary mortal could never hope to understand them.

I believe I understand now. We cannot understand the ways of the divine, either. So that puts both big business and divinity in the same boat.

I don't mean to be hard upon divine things, for I am very sure that big business is certainly an unwelcome bedfellow.

When a man has a vision, we usually suspect that he ate pie or rarebit very late at night; yet there are visions which seemingly had a divine or superhuman origin.

Joan of Arc certainly did not lay the source of her vision to indigestible eating, but the story of her earthly failure certainly gave divinity an excellent alibi.

But a new crowd of men have been indulging in visions. Cyrus McCormick had a vision which led him to believe he was to become a world-wide benefactor of humanity.

John D. Rockefeller has never claimed a vision, yet the defense of the Standard Oil Co. was that it was a benefactor of humanity.

For humanity sake, all the early oil crimes were permitted, so that you would have to pay 20 cents for gasoline—and buy it from the Standard Oil Co.

In the American Tobacco case, the government lawyers learned, to their surprise, that they were persecuting benefactors of humanity.

Someone long ago had a vision which commanded him to tack tobacco signs upon every pole and post in the world, so he organized the tobacco trust to take advantage of this advertising.

In the anthracite case, where Mr. Baer made his famous statement about his close relation to God in coal matters, there was a vision.

In this vision, the first coal magnate got it straight that a hard coal monopoly would be a benefactor to humanity because it would give a staple market.

In the cotton case there was a similar vision. The gathering up of all the cotton and the raising of prices beyond reason, were to be a great benefaction to humanity.

And getting down to our own peaceful occupation. Have we not read the Bell vision in the two-column advertisement?

Not a word about advantages to their stockholders—that is between the lines. The cause of humanity was uppermost, a grand and universal service, one telephone system, intercommunicating and interdependent, everything made by the Bell factory.

I think we are a very unjust people. Rockefeller and his associates spent millions in the service of humanity. They wrecked competitors in a choice and zealous way, and they founded a college to promote the cause of their reformed economics.

But the colleges have failed to do their duty, as well as the government has failed to see the beauty of this Oil benefaction.

An unkind government was not impressed by the humanity argument and cruelly forced them to disband, and the colleges failed because they have to teach such doctrines to the young.

The young have no respect for size, tradition or wealth.

The rich young man usually has a stormy life. The young people have nothing but contempt for him—and, worst of all, this has displeased Mr. Perkins.

No doubt, he will yet spring another presidential candidate pledged to destroy the colleges, because they do not appreciate predatory wealth.

The harvester case is interesting. They were doing an unusual American trade.

Then they realized the hardship of the poor European peasant, toiling with scythe and rake.

How they longed to take this brother by the hand and relieve him! You can't tell me that this was not true love.

Their burning desire to be a benefactor to mankind of course took capital—just as it takes capital to send the gospel into the "darkest" countries.

A costly steel plant was needed, and goods must be sold in Europe by jobbers.

They had to send harvester missionaries to Europe to teach those horny-handed sons how to use the machines; of course, repair men had to be close because harvesters only break down during harvest. But this took money. So the vision directed them further. Not only were they to sell these harvesters at low prices, but they were to take notes, and get their money in later life.

But who could do this? Not a disinterested and generous harvester now would undertake the uplift of the European wheat and oat gleaner.

The vision beckoned further, and three bright letters appeared in the vision—O. A. T.

Then it occurred to the sleeping man that those letters should be W. H. E. A. T. But the vision silently nodded negatively—it was neither oat nor wheat.

Organize A Trust! That was the meaning.

And today a cruel government is asking these benefactors of the human race to unscramble and to do it quick.

I fear that my reader is as dense as I. As hard as I have searched, I can't find any trace of the humanity, unless it is human nature to want to grab it all, and after grabbing it all, to have a fortified monopoly so that future incompetents will not lose a means of livelihood.

I am afraid we do not have sufficient mind to understand big things, big business, big bridges, etc.

Can it be that Cain killed Abel for humanity's sake? What a pity that his lawyers had not posted him with such a winning appeal?

Can it be that zealous Saul chased the early Christians for humanity's sake?

And was that the object of the Puritans in burning witches and driving out Quakers?

The benefaction to humanity reminds me of a scene in Viola Allen's "Glory Quayle," where her rather crazy admirer comes to her room to kill her, in order to save her soul.

Maybe that is the trust theory: To kill competitors to save their souls—and then have a monopoly so that the human race may be happy.

But many happy communities do not know where there is a Bell telephone monopoly? Read TELEPHONY's state commission reports and you will see very few happy people, if the public may be styled people.

Does telephone monopoly ever reduce rates after it absorbs its competitor? That is the perplexing problem which makes the public's head ache.

They hear that one telephone company can do it cheaper, and immediately a raise follows.

Something must be shown in argument besides the humanity benefactor business.

I believe visions became obsolete soon after the "burning bush" incident.

No one believes in ghosts and few believe that a departed spirit returns to earth.

So I don't believe the trusts can get away with this sadly deficient argument.

The public is having visions on its own hook and they do not at all agree with the gilt-lined visions of the trust fathers—they do not agree with the visions seen by the bankers, either.

I believe the whole banking situation and its conceived whine about the Currency Bill can be laid to a few Chicago and New York bankers—and their troubles and griefs are entirely political.

The principal vision dealer is James B. Forgan, of the First National Bank. He has done a great deal of talking, and his last interview gave him entirely away.

He hates President Wilson and everyone connected with him, and I believe he has a grievance against his own depositors.

After President Wilson has shown all the patience with Mexico, we learn from this distinguished banker that if intervention is necessary, President Wilson will find a different variety of persuasion needed in teaching morals to Mexico, than in teaching the American youth in college.

You see he could not help but take a slap at the man who is giving us a Currency Bill after a 30 years' demand for it.

No one wants to intervene in Mexico. Everyone knows it will cost lives and money—trying to protect a bunch of expatriates.

I tell you what I believe: A man who leaves this country to go into business in another country has no hold on us.

If he starts trouble elsewhere, let him get out of it without hurrying a navy or army to help him.

I don't think you want to lose your son in a Mexican war. Think of that!

England seems to be looking for a universal stock crash. They are having visions of disaster. Their offer to stop battleship construction for one year shows that there is some stagnation there.

France ran behind last year something like $250,000,000—Jim Hill should give them some lectures on bonds and economy.

The public debt of France is already $7,000,000,000—scattered over 40,000,000 people—or $200 a head and twice ours.

It shows that even nations are living beyond their means.

There is another group of Americans who had visions, and they were not selfish, either.

The Astors had visions of the growth of New York—and it made them rich.

Marshall Field did not make his money in dry goods alone. Field invested in railroad, telephone and telegraph stocks and allowed others to develop them, encouraged by his selection.

Moses Taylor, who recently died with $40,000,000, backed the Lackawana Railroad one time when dollars looked like double eagles to them.

This is by no means a criterion to judge by today; to encourage you to buy stock in everything offered.

In the first stages of railways, telephones, telegraphs and wireless development, immense amounts of money were lost.

Field always waited for the second stage—and his thousands grew to millions.

This variety of vision must not be condemned, because the money they put in was doubly and triply welcome, and it undoubtedly saved others—without appreciation either, I suspect.

But the vision, that leads to monopoly with its current evils of discrimination, the most cowardly earthly thing, and others as well, is the one that needs stamping out. It is of the deadly coral snake variety.

Its bite means death—no human being has ever benefitted from contact with it.

Such visions have cursed the world for thousands of years, although they have become less cruel physically these latter centuries.

I am glad the government is not impressed with the divine origin theory of commands to monopolize the products of the earth, for these visions are man-made, and are only interpreted by high-priced lawyers.

Any vision of the telephone business which does recognize the local issue law, is worse than man-made—it is the vaporing of a rarebit fiend.

No power can override ordinary common sense, any more than it can command the sun to stand still by day and the moon by night over the shadows of Wall Street.

The government's activity is, first of all, an attempt to beat some of the ideas of common sense into certain groups of human beings; to force them to do something for their own good, as well as the public good.

The young ministerial candidate passed such a bad examination that they asked him why he wanted to be a minister.

He said he had seen a vision in which the letters P. C. stood out in bold relief.

Preach Christ! So he interpreted it, but the Examining Board said he was wrong. It meant "plow corn," and they sent him home.

That will be the government's attitude: the monopolists and trade restrainers have interpreted wrong, and will have to go back to their old haunts.

I believe that is written on the wall over by the candlesticks—and it will take no Daniel to see it either.

No longer is the public willing to subsist on the crumbs from the monopoly table.

The public wants real benefits and it already has a realization that benefaction, as charity, should begin at home and come from the individual instead of a group of them in trust relation.

There were 145 more failures in October than in September, the worst month since January.

You know what this means. Practically half of these failures were due to inability to borrow money from the banks during the stressful crop moving season.

That is what the Currency Bill is for; to give manufacturers and business men the right to ride through money scarcity as safely as the banks do.

Just because a coterie of bankers hate Bryan, Wilson and Secretary McAdoo, we are still without the means of protecting honest industry.

Today the gambler is the only portion of humanity getting full benefits—and this is no vision.

MORAL: When interpreting a dream, remember what you ate.

Annual Convention of Railway Commissioners.

The 25th annual convention of the National Association of Railway Commissioners recently held in Washington brought out some interesting reports and valuable discussion thereon. The question of rates, state and interstate, naturally came in for much attention, as did also the question of state and federal control of public utilities. The association elected the following officers for the ensuing year: J. B. Finn, Kentucky, president; Clifford Thorne, Iowa, first vice-president; Judge Prentiss, Virginia, second vice-president; W. J. Connelly, Interstate Commerce Commission, secretary, and William Kilpatrick, Illinois, assistant secretary. The next meeting will be held in Washington on November 17, 1914.

The report on telegraphs and telephones in part follows:

"Up to this time no specific method has been adopted generally as a basis for rate-making. Individual plant conditions have governed in nearly all cases and therefore we will treat the subject generally and submit some views together with what comparative statistical information we have been able to secure. That scientific making of rates has not been indulged in to any great extent can be clearly observed through the following comparisons of cities, in which are located competitive plants, with cities where there is no competition:

Competition:		Population.
Chicago, Ill.	$84	2,185,283
Philadelphia, Pa.	90	1,549,008
St. Louis, Mo.	78	687,029
Cleveland, O.	72	560,663
Buffalo, N. Y.	72	423,715
Indianapolis, Ind.	54	233,650
Memphis, Tenn.	48	131,105
Decatur, Ill.	30	31,140
Monopoly:		
New York, N. Y. (Manhattan)	$228	2,331,542
Boston, Mass.	125	670,585
Baltimore, Md.	174	558,485
San Francisco, Cal.	180	416,912
Denver, Colo.	138	213,381
Oakland, Cal.	84	150,174
Burlington, Iowa	72	24,324

The above comparisons raise the following questions: (1) Is competition necessary to secure reasonable rates? (2) Are the rates charged under competitive conditions reasonable or remunerative? (3) What remedy should be suggested?

Without question competition has been the means of the public receiving service at a lower cost, but this does not necessarily mean that the rates are either reasonable or remunerative. Many companies have entered the field of competition with low rates and in a short time found it necessary to get nearer the plane of their competitor, or, in some cases, the competitor has met the lower rate, this nearly always resulting in a consolidation of the two plants within a short period of time. Where competition exists the public is in a state of semi-belief that it is receiving service at as low a rate as it is possible for the companies to render the service. The activity of the competitors in systematic advertising and the soliciting of new business through well trained men, all tend to stimulate the ever smoldering fire of public discontent, which, no matter how carefully nursed, breaks forth from time to time, causing renewed activity and in many instances, a reduction in rates by one or the other competitor and in many instances by both. Surely scientific lines are not followed under such conditions.

A remedy for these conditions is being sought by both the public and the utility operators. There can be no question but that duplicate plants in the same city are a waste of money and a public burden.

State control of such utilities offers the best remedy for these conditions. Government control has not proved entirely successful. For example, the Japanese government had on March 31, 1911, 45,000 persons on the waiting list for telephone service; it appropriated $12,000,000 for expansion for the year ending March 31, 1913, and was considering an appropriation of $25,000,000 for the next five years ending March 31, 1918. There are now 28 states exercising control over telephone utilities. However, the work has just begun. The railroads have consumed so much of the time of the various commissions that the telephone situation has been considered, to a large extent, more or less incidental, but, when it is considered that the number of telephone conversations per year outnumber the passengers carried by the railroads over five to one, more consideration should be given the subject. The details of the telephone business are far greater than those of the railroad business, and the average commissioner would rather wrestle with ten big railroad cases than one small telephone case.

Interesting figures have been compiled showing the telephone development in 115 cities having a population of over 50,000 as of January 1, 1913. The first 14 cities are herewith enumerated:

Name of City.	Stations per 100 population.	Estimated population of Exchange area.	Total Stations.
San Francisco	23.7	454,000	107,702
Spokane	20.4	105,300	21,411
Omaha	20.1	166,000	33,358
Dallas	19.1	114,700	21,881
Des Moines	16.7	96,000	16,074
Oakland, Cal.	16.4	246,000	40,267
Salt Lake City	16.0	116,000	18,503
Denver	15.9	222,000	35,365
Seattle	15.7	285,000	44,810
Wichita	15.6	57,400	8,938
Houston	15.4	106,000	16,477
Oklahoma City	15.3	65,000	9,919
Portland, Ore.	15.3	255,000	39,101
St. Joseph, Mo.	15.2	79,800	12,094

January 1, this year, the Interstate Commerce Commission promulgated its classification of telephone accounts and nearly all of the telephone companies, as well as the state commissions, are endeavoring to follow the system prescribed as nearly as possible. The system seems at this time to be completed and so arranged as to give any class of information desired.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Begun in the August 16 Issue, Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery

By Paul Hamilton

"There are other things to be done, in connection with cutting these lines metallic, besides rewiring the switchboard, I shall also put in a set of chloride batteries and a small charging machine, as soon as I can get power to run a motor." Mr. Barrows explained to Frank and Germany as he examined the drops and jacks seeking a plan for rewiring.

"We will also have to provide protectors for the exchange as well as the subscribers' instruments. First we'll figure out how we can rewire the board satisfactorily at the least expense. As we will have to install new distributing blocks, we may as well plan for new wiring throughout, using coded cable for the purpose."

"We might take the last hundred drops and jacks first and throw the lines onto them from the next hundred," Frank suggested.

"We will have to group the lines, so as to enable us to do the outside work simultaneously. Here (Fig. 25-*A*) is what we will have to do. We can use the ground ring, as the drops and jacks are already tied together. The jack will have to be modified by adding a spring or punching (*A*, Fig. 25) to the sleeve, which is dead now.

"Here is a punching in this catalogue (Fig. 25-*B*) that will do. We can easily loosen the binding screw and slide the punching under the head and then we will have a solid contact with the sleeve."

"Will it be necessary to take out each jack?" Frank inquired.

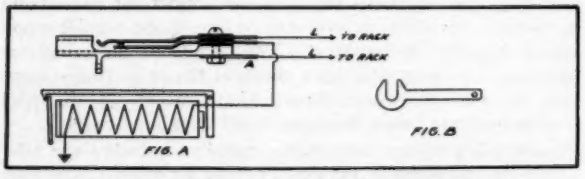


Fig. 25. Wiring of Jacks for Metallic Circuit.

"No, I think not. We will try taking out the mountings, which are 10 per strip and also 10 per panel."

"We cannot pull out the old wiring if you intend to use the red wire that runs up to the drops," commented Germany.

"No, you will have to leave it in and dress it up as neatly as possible. If I intended keeping this board for a number of years, I would rewire the drops also, taking them to the distributing frame. This would be the proper way (Fig. 26). As it is, we will run one cable only from the jacks to the protector, omitting the intermediate rack, as that is necessary only where a multiple type of board is used."

"Will putting in protectors do away with the fuses there in that cupboard?" Germany asked.

"Yes. Those will no longer be necessary. Also all the old wire and Okonite cable coming in from the outside, will be replaced with standard lead covered, paper insulated cable, but we will get to that later."

"Things are moving pretty fast. We won't have time to go over all our instruments," Frank commented.

"No," responded Mr. Barrows. "We will have to modify our plan a little and give attention where it is most needed. I am going to have my hands full laying out the work and keeping in touch with the lighting people. I intend getting a man to work inside with Mr. Dietz and two men to help on the outside. Each of you will have your department to look after. We will begin on the inside, as some of that material is here and all of it will be on hand in a few days; also I have completed the drawings for you to work from."

"In this drawing (Fig. 27) are shown the six panels containing 10 strips of 10 jacks each, or 100 jacks.

"You can cut and form the cables as fast as you like. The

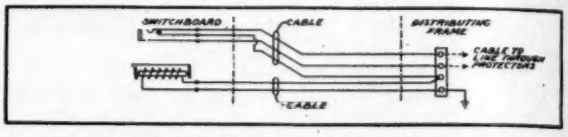


Fig. 26. Circuit if Both Jack and Drop Were Rewired.

measurements will be easily taken. We will allow 12 feet from the switchboard to the protectors for the first bank, 1-10 and increase the length eight inches up to 91-100, which will complete our first panel. Beginning with 101 to 110, you can drop back 12 inches as the panel is that much nearer the rack."

"The other end will not change 'til when?" Germany inquired.

"When you get to 201 to 210 (Fig. 28-*A*) which will bring you back to the top of the second strip of arresters."

"Can we form both ends at the same time?"

"It could be done, but in this case, it is the safest to leave the arrester end until the cable is laid in the runway. There might be a variation of an inch or two in my measurements. Besides there is not much forming to be done, except pulling the wires through the fanning strip."

"Fanning strip? what's that?" queried Germany.

"It is a hardwood strip bored with holes so that when it is set up back of the arresters, the wires may be pulled through the holes, this way (Fig. 28-*B*), exactly opposite the springs to which they are to be soldered."

"Where I worked they formed the cables by pulling the wires through holes in a forming board," was Germany's next remark.

"That is an old way and a slow one. We use pins or nails for the same purpose now. We make up a forming board (Fig. 29) like this: Drive a row of ten nails separating them by the same distance as the jacks are apart—a scant ¾ inch.

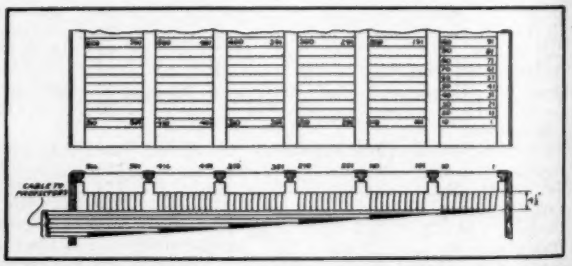


Fig. 27. Arrangement of Jack Strips in Switchboard Panels.

Out here we will drive three or four binding nails. Then we will measure and mark the length of the skinner, or distance the insulation is to be left on the wires. The first ten cables will come on the inside and will be 4½ inches. Each succeeding ten will be the width of the cable or 5/8 inch longer.

"There are two things to remember in laying the cable on the forming board, namely, whether the lead is right or left, and whether the first color of your code will be at the right or left. In this case the first color, blue, will be taken out at the point or end of the form."

"Don't you cook the cable first thing?" Germany inquired.

"Yes. It is necessary to 'boil it out' for two reasons. First to get out all the moisture and second to bind the silk and cotton insulation to prevent it from ravelling."

"How do you tell when the wax is hot enough?" asked Germany.

"From practice and experience. If it is too hot, we say it is 'burnt.' It crumbles into dust when the cable is handled. The wax should never be allowed to come to a boil," answered Mr. Barrows.

"And how long do you cook the cable?"

"That depends upon the amount of moisture there is in it. The moisture is shown in bubbles and foam on top of the wax. The cable should be kept in the wax until the bubbling ceases and the surface of the wax is smooth and free from foam."

"Will we solder the jacks in the board?"

"I think it will be the better way on account of having the old form to take care of. It will make a neater job to have the new form free to work with.

"Now boys, I don't wish to work a hardship on you, but we have a great deal of work on hand. I'll work out my plans and we can put in one or two evenings a week going over them in detail together. In that way, we can always work with the knowledge of what each step leads to and not break into the day's routine."

"All but Tuesday and Thursday nights suit me," said Germany. "Tuesday is lodge night and Thursday my wife goes to a society of some kind and I have the children to mind."

"Wednesday and Friday are my busy nights," Frank chimed in. "Wednesday the schoolboard meets. They are trying to put over a schoolbook deal, and they'll do it the first time Bill Leonard or I stay away. Friday is lodge night with me—no pinochle lodge either."

"Is that so, Mr. Rice?" Germany retorted. "Well, when you get a hundred members, you come and tell me."

"Never mind boys, we'll fix Monday as our regular meeting night," Mr. Barrows interrupted. "To make it equitable all around, we will call a working day nine and half hours."

"Shall we cut the head or the tail of the day?" Germany inquired.

"Well, I'll tell you my experience. In general a man's habits

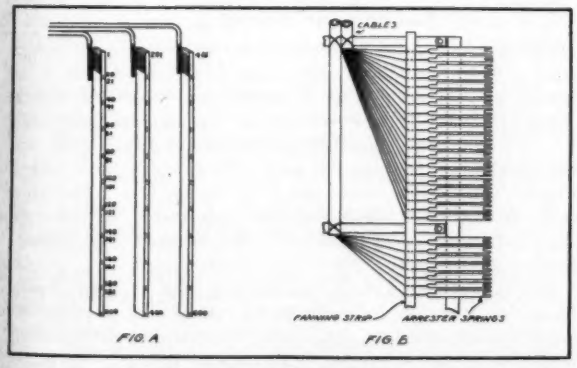


Fig. 28. Arrester Bars and Application of Fanning Strip.

are more regular in the morning than in the evening. He becomes accustomed to getting up at a certain time every morning, and things move along in a certain routine until he starts for his work to reach the office at seven. Now suppose seven-thirty is set for the time the whistle will blow. It won't be long until he'll be getting up a half hour later and, while I can't say the half hour sleep will not do him good, practically he's nothing ahead. Now give him a half hour at the end of the day and he will devote it to something of economical value, and get more practical benefit from it. Don't you agree with me?"

"All but on washing day," answered Germany.

"I guess 5:30 will suit my family all right," Frank replied.

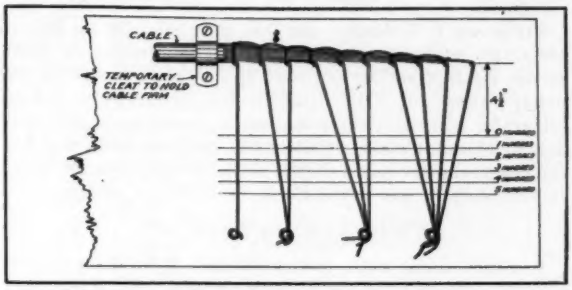


Fig. 29. The Forming Board.

"All right then. Probably Mr. Dietz can get the washing through the same as he has been doing. Tomorrow we will call the day finished at 5:30.

(To be continued.)

Central Union Completes Indianapolis Appraisal.

The Central Union Telephone Co. has had a force of 20 expert engineers engaged for the past six months in making a detailed appraisal of the entire physical property of the Indianapolis exchange for use in an application to the Public Service Commission of Indiana for an upward revision in rates. The appraisal, which is now completed, places the value of the property at approximately $4,000,000. The details of the appraisal make up a book of 35 sections, with a total of 358 pages. The general scope of the appraisal was to determine the cost of reproduction and the structural value of the property, consisting of nine central offices.

The central office switchboards, private branch exchanges, subscribers' instruments, booths and special fittings, furniture, land and buildings were appraised by engineers especially conversant with each class of property. Each individual piece of physical property was inspected and measured by the engineers. All book records were ignored, and the amount, quality, condition and value of thousands of units comprising the property were ascertained from inspection and measurement. The entire property was classified in accordance with the requirements of the public service commission.

Before arguing for the rate allowance the company started at the bottom by making the appraisal and has avoided all reference to stocks, bonds, debts, book values, etc. Having the appraised value of the property, the revenue as collected and the expenses disbursed month by month, the question becomes one of convincing the commission that present rates do not provide sufficient revenue to pay expenses and a reasonable return on the investment.

The present rate schedule of the Central Union company was set up in 1903 when it had about 5,000 stations as against a present development of approximately 33,000 stations, which is rapidly growing. The details of the appraisal are now in the hands of the company's experts and it is said that within the next few weeks a suggested schedule for the adjustment of the Indianapolis rates will be presented to the Public Service Commission for investigation and approval.

Recollections of the Birth and Babyhood of the Telephone

Events Attending Its Discovery, Development and Introduction into Public Use—Experimenting with Bell—Difficulties Experienced in Lectures—Address Before The Telephone Pioneers of America — Third Installment

By Thomas A. Watson

Professor Bell would have one telephone by his side on the stage, where he was speaking, and three or four others of the big box variety we used at that time, would be suspended about the hall, all connected by means of a hired telegraph wire with the place where I was stationed, from five to 25 miles away. Bell would give the audience, first, the commonplace parts of the show; and then would come the thrillers of the evening—my shouts and songs.

Watson's Famed Repertoire.

I would shout such sentences as, "How do you do?" "Good evening," "What do you think of the telephone?" which they could all hear, although the words issued from the mouthpieces rather badly marred by the defective talking powers of the telephones of that date. Then I would sing "Hold the Fort," "Pull for the Shore," "Yankee Doodle," and, as a delicate allusion to the Professor's nationality, "Auld Land Syne." My sole sentimental song was "Do Not Trust Him, Gentle Lady." This repertoire always brought down the house.

After every song I would listen at my telephone for further directions from the lecturer, and always felt the artist's joy when I heard in it, the long applause that followed each of my efforts. I was always encored to the limit of my repertoire and sometimes had to sing it through twice.

I have always understood that Professor Bell was a fine platform speaker, but this is entirely hearsay on my part for, althought I spoke at every one of his lectures, I have never yet had the pleasure of hearing him deliver an address.

In making the preparations for the New York lectures, I incidentally invented the soundproof booth, but as Mr. Lockwood was not then associated with us, and for other reasons, I never patented it. It happened thus: Bell thought he would like to astonish the New Yorkers by having his lecture illustrations sent all the way from Boston. To determine whether this was practicable, he made arrangements to test the telephones a few days before, on one of the Atlantic & Pacific company's wires. The trial was to take place at midnight. Bell was at the New York end, I was in the Boston laboratory.

Having vividly in mind the strained relations already existing with our landlady, and realizing the carrying power of my voice when I really let it go, as I knew I should have to that night, I cast about for some device to deaden the noise. Time was short and appliances scarce, so the best I could do was to take the blankets off our beds and arrange them in a sort of loose tunnel, with the telephone tied up in one end and the other end open for the operator to crawl into. Thus equipped I awaited the signal from New York announcing that Bell was ready. It came soon after midnight. Then I connected in the telephone, deposited myself in that cavity, and shouted and listened for two or three hours. It didn't work as well as it might. It is a wonder some of my remarks didn't burn holes in the blankets.

We talked after a fashion but Bell decided it wasn't safe to risk it with a New York audience. My soundproof booth, however, was a complete success, as far as stopping the sound was concerned, for I found by cautious inquiry next day, that nobody had heard my row. Later inventors improved my booth, making it more comfortable for a pampered public, but not a bit more soundproof.

One of those New York lectures looms large in my memory on account of a novel experience I had at my end of the wire. After hearing me sing, the manager of the lectures decided that, while I might satisfy a Boston audience, I would never do for a New York congregation, so he engaged a fine baritone soloist—a powerful negro, who was to assume the singing part of my program. Being much better acquainted with the telephone than that manager was, I had doubts about the advisability of this change in the cast. I didn't say anything, as I didn't want to be accused of professional jealousy, and I knew my repertoire would be on the spot in case things went wrong.

I was stationed that night at the telegraph office at New Brunswick, New Jersey, and I and the rest of the usual appliances of that end of the lecture went down in the afternoon to get things ready. I rehearsed my rival and found him a fine singer but had difficulty in getting him to crowd his lips into the mouthpiece. He was handicapped for the telephone business by being musical, and he didn't like the sound of his voice jammed up in that way. However, he promised to do what I wanted when it came to the actual work of the evening, and I went to supper. When I returned to the telegraph office, just before eight o'clock, I found, to my horror, that the young lady operator had invited six or eight of her girl friends to witness the interesting proceedings.

Now, besides my musical deficiencies, I had another qualification as a telephone man—I was very modest; in fact, in the presence of ladies, extremely bashful. It didn't trouble me in the least to talk or sing to a great audience, provided, of course, it was a few miles away, but when I saw those girls, the complacency with which I had been contemplating the probable failure of my fine singer, was changed to painful apprehension. If he wasn't successful, a very bashful young man would have a new experience. I should be obliged to sing myself before those giggling, unscientific girls.

Fiasco of the Negro Baritone.

This world would be a better place to live in if we all tried to help our fellow men succeed, as I tried that night, when the first song was called for, to make my musical friend achieve a lyrical triumph on the metropolitan stage. But he sang that song for the benefit of those girls, not for Chickering Hall, and it was with a heavy heart that I listened for Bell's voice, when he finished it. The blow fell. In his most delightful platform tones, Bell uttered the fatal words I had foreboded, "Mr. Watson, the audience could not hear that. Won't you please sing?"

Bell was always a kind-hearted man, but he didn't know. However, I nerved myself with the thought that that New York audience, made sceptical by the failure of that song, might be thinking cynical things about my beloved leader and his telephone, so I turned my back on those girls and made that telephone rattle with the stirring strains of "Hold the Fort," as it never had before. Then I listened again. Ah, the sweetness of appreciation! That New York audience was applauding vigorously. When it stopped, the same voice came with a new note of triumph in it, "Mr. Watson.

the audience heard that perfectly and call for an encore." I sang through my entire repertoire and began again on "Hold the Fort," before that audience was satisfied.

That experience did me good—I have never had stage fright since. But the "supposititious Mr. Watson," as they called me then, had to do the singing at all of Bell's subsequent lectures. Nobody else had a chance at the job; one experience was enough for Mr. Bell.

My baritone had his hat on his head, and a cynical expression on his face, when I finished working on those songs.

"Is that what you wanted?" he asked.

"Yes."

"Well, boss, I couldn't do that." Of course he couldn't!

A Performance That Miscarried.

Another occasion is burnt into my memory that wasn't such a triumph over difficulties. In these lectures we always had another trouble to contend with, besides the rusty joints in the wires; that was the operators cutting in, during the lectures, their highest resistance relays, which enabled them to hear some of the intermittent current effects I sent to the hall. Inductance, retardation and all that sort of thing which you have so largely conquered since, were invented long before the telephone was, and were waiting here on earth, all ready to slam it when Bell came along.

Bell lectured at Lawrence, Mass., one evening in May, and I prepared to furnish him with the usual program from the laboratory in Boston. The following is the wording of one of the hand bills and posters used to advertise the lecture:

City Hall, Lawrence, Mass.
Monday Evening, May 28.
The Miracle.
Wonderful Telephone Discovery
Of the Age.

Prof. A. Graham Bell, assisted by Mr. Frederic A. Gower, will give an exhibition of his wonderful and miraculous discovery, The Telephone, before the people of Lawrence as above, when Boston and Lawrence will be connected via the Western Union Telegraph and vocal and instrumental music and conversation will be transmitted a distance of 27 miles and received by the audience in the City Hall.

Prof. Bell will give an explantory lecture with this marvelous exhibition.

Cards of Admission, 35 cents.
Reserved Seats, 50 cents.
Sale of seats at Stratton's will open at 9 o'clock.

But the wire the company assigned us was the worse yet. It worked fairly well when we tried it in the afternoon, but in the evening every station on the line had evidently cut in its relay, and, do my best, I couldn't get a sound through to the hall.

While the people who attended the lecture were aware of what took place in the hall, a natural curiosity existed to know what would occur at my end of the wire.

Blaming it on the Aurora Borealis.

A local newspaper sent a representative to be with me and subsequently came out with the following report:

Mr. Fisher returned this morning. He says that Watson, the organist and himself occupied the laboratory, sitting in their shirt sleeves with their collars off. Watson shouted his lungs into the telephone mouthpiece, "Gower, Gower, Gower," "Hoy! Hoy! Hoy!" and, he receiving no response, inquired of Fisher if he be pardoned for a little "hamburg edging" on his language.

Mr. Fisher endeavored to transmit to his Lawrence townsmen the tune of "Federal Street" played upon the cornet but the air was not distinguishable here. About 10 p. m., Watson discovered the "Northern Lights" and found his wires alive with lightning, which was not included in the original scheme of the telephone. He says the loose electricity abroad in the world was too much for him.

The next morning a poem appeared in the Lawrence paper, the Daily American, Tuesday, May 29, 1877. The writer must have sat up all night to write it. It was entitled, "Waiting for Watson," and as I am very proud of the only poem I ever had written about me, I am going to read it. Please notice the great variety of human feeling the poet put into it. It even suggests missiles, though it flings none.

Waiting for Watson.

To the great hall we strayed,
Fairly our fee we paid;
Seven hundred there delayed,
But, where was Watson?

Was he out on his beer?
Walked he off on his ear?
Something was wrong, 'tis clear,
What was it, Watson?

Seven hundred souls were there,
Waiting with stony stare,
In that expectant air—
Waiting for Watson.

Oh! how our ears we strained,
How our hopes waxed and waned,
Patience to dregs we drained,
Yes, we did, Watson!

Softly the bandmen played,
Rumbled the Night Brigade,
For this our stamps we paid,
Only this, Watson!

But, Hope's by fruitage fed,
Promise and Act should wed,
Faith without works is dead,
Is it not, Watson?

Give but one lusty groan,
For bread we'll take a stone,
Ring your old telephone!
Ring, brother Watson!

Doubtless 'tis very fine,
When, all along the line,
Things work most superfine—
Doubtless 'tis, Watson.

Let's hear the thrills and thrums
That your skilled digit drums,
Striking our tympanums—
Music from Watson.

We know that, every day,
Schemes laid to work and pay,
Fair and "gang aft a-gley"—
Often, friend Watson.

And we'll not curse, or fling,
But, next time, do the thing
And we'll all rise and sing,
"Bully for Watson!"

Or, by the unseen powers,
Hope in our bosom sours,
No telephone in ours,—
"Please, Mr. Watson."

But my vacation was about over. Besides raising the wind, the lectures had stirred up a great demand for telephone lines. The public was ready for the telephone long before we were ready for the public, and this pleasant artistic interlude had to stop; I was needed in the shop to build some telephones to satisfy the insistent demand.

Giving Two Lectures at Once.

Fred Gower, a young newspaper man of Providence, had become interested with Mr. Bell in the lecture work. He had a unique scheme for a dual lecture with my illustrations sent from a central point to halls in two cities at the same time. I think my last apearance in public was at

one of these dualities. Bell lectured at New Haven and Gower gave the talk at Hartford, while I was in between at Middletown, Conn., with my apparatus, including my songs. It didn't work very well. The two lecturers didn't speak synchronously. Gower told me afterwards that I was giving him, "How do you do?" when he wanted "Hold the Fort"; and Bell said I made it awkward for him by singing, "Do Not Trust Him, Gentle Lady," when he needed the trombone solo.

(To be concluded.)

The Value of Standardization of Operating Methods

Advances in Equipment and Changes in Conditions in Independent Field Necessitate Improved Operating Methods—Service Department of Independent Telephone Association of America to Compile Standard Rules for Local Operation—Some Queries Answered

By Frank L. Elridge

At various times the question has been discussed of the probabilities of establishing permanent standards, such as operating rules and regulations, for Independent telephone companies to work under. While difficulty may be experienced to a certain degree in some localities, in securing the adoption of standards and methods which may be decided upon for the operation of Independent telephone exchanges, this trouble will not be experienced as a general proposition, for the average manager of an Independent telephone exchange is as much interested in modern ideas and up-to-date methods for the proper handling of traffic, as he is in the latest apparatus and equipment. For instance, if the very best apparatus is installed in a plant, without system and a competent operating force, the desired service cannot be rendered.

There are many companies which will maintain when the question of operating conditions is discussed, that they are getting along in a satisfactory manner and do not care much what some of the other companies are doing; or that they are not interested in making any changes in their present rules, providing they have any in use, or that they would be unable to induce their operators to abide by any particular instructions. Such replies have been made at different times when the proposition of efficient operating has been put up to them.

Regardless of what grade of service is being rendered by the company, there is always room for improvement. As equipment is improved and changes are brought about in the Independent telephone field, the service must also be made to keep abreast of the other improved conditions of the plant. It is not a question as to whether operators would like to be governed by operating methods. It is a matter which is entirely up to the manager, as to how he shall improve his service. The average manager is interested in doing this, if he can secure the necessary assistance, and also knows that the majority of Independent companies are going to co-operate with each other, and with the Service Department of the Independent Telephone Association of America which has been established for their benefit and to which they may call for such assistance as is necessary from time to time.

An Opportunity to Standardize Service.

The operating of our companies can be placed on a basis second to none, from a point of rendering efficient service, and this will increase both traffic and revenue, and in many other ways, promote the welfare of the companies. Now is the time for all Independent companies to get together and with the aid of the Service Department, get their service on the best possible basis.

Suppose, for instance, all of our companies should issue instructions whereby the "A" or answering operator, the one the subscriber first meets on the line when picking up the receiver, would use the phrase "Number Please," would this not tend to create a good impression on the patron or subscriber? This rule in answering is standard; however, there are companies who do not make it effective. One particular office can be cited where the subscribers have been calling by name rather than by number. The operators have been answering by using such phrases as "Hello," "This is Central" or in some other manner. This particular office has recently standardized in connection with the answering of the "A" operators and they now answer, using the phrase "Number Please?" with splendid results to both the company and subscribers.

This word "Please" is an important word and carries weight with the subscriber or patron, especially if it is spoken by a trained voice in such a manner that the spirit of friendliness and good will is conveyed. A subscriber many times forms an opinion of the company from the manner in which his call is answered and handled. This is second in importance only to the equipment itself, and pleased subscribers are surely mighty good publicity agents. It should always be the aim to convey to the subscriber, by means of pleasant, courteous service, appreciation of his business.

There may be some changes required in the various offices where certain standards and practices are now effective; however, every Independent company is urged to make the operating rules of the Service Department, just as soon as they are ready for distribution, effective in all of their exchanges. If this is done, all will be handling traffic and operating by the same methods.

The purpose in discussing the "A," or answering, operator at this time, and the method of answering, is due to her being the first person with whom the subscriber comes in contact. It will be an advance step in the direction of improved operating if all exchange managers will make the answering phrase, "Number Please?" effective, as called for by the new local operating rules of the Service Department.

Should the switchboard fail to serve its purpose because of increased business, or become obsolete so as to be unable to render efficient service, it would become necessary to get additional or new facilities in order that new business offered might be handled in a satisfactory and efficient manner. The same principle applies to the operation or handling of traffic. Modern methods must be effective to meet the requirements of modern apparatus.

Standardization of operating rules will improve the service in many ways. Operators will not hold subscribers on the line as long as when not following standard practice.

They will not be asked all sorts of questions and be required to carry on conversation with subscribers; or permit the subscribers to keep them busy answering unnecessary questions, thus allowing other calls to pile up, and the position to become "swamped."

The subscribers will appreciate the value of the improved service obtained from a regular system for operating. While the new method of handling the calls may be somewhat of a novelty to the operators at the start, and difficult for them to become accustomed to, they will soon appreciate the value of answering promptly and in a business-like manner.

It is the intention of the Service Department to publish many of the inquiries of its members regarding important subjects on which they seek advice. The queries will be referred to competent telephone men who are interested in the Service Department of the new organization.

PLANS OF THE SERVICE DEPARTMENT.

Where an application is received from an Independent telephone man seeking employment, it will also be published, giving sufficient information concerning his qualifications, etc., and the original correspondence can be seen by applying to the Service Department. The employment bureau is available to operating companies who are looking for help. Their requirements in this respect will be made known, in order that competent persons may be secured for their exchanges. Parties applying to the employment bureau for aid, should give full details of positions and qualifications.

Some of the inquiries which have been received and the information furnished are as follows:

Is it possible for a line to get induction through a lead sheath paper cable when it is disconnected at the cable terminal? If so, state how and why it can be, and if a grounded sheath makes any difference.

The induction could be caused by split pair, leaky cable or unbalanced line. This can be readily detected by putting a buzzer on the leaky pair. This noise would be heard on all other conductors in the cable. Grounding the sheath would not be certain to clear this trouble.

There is one feature of our business for which we have not as yet found a very practical solution. Inquiries among the trade supplying test boards has not developed anything within the limits of cost which we can stand, excepting in Western Electric apparatus, and we have never bought any of that and are not intending to. We have over 30 metallic circuit, rural lines terminating on our main board; have no test panel, but bring them in from the outside work on insulated, twisted pairs of best quality, copper clad drop wire through No. 400 arresters directly connected to the board. While we are subject to very heavy lightning in this section, we find the arrangement has stood up the best of any that has been tried. We use a Wheatstone bridge and the ordinary telephone test sets, but have no way of quickly testing out the trouble on lines, as could be done from a panel with cords, etc.; also no way of making up and taking down phantom circuits which we have thought of using by means of cords and plugs on a test panel. Any practical suggestions would be gratefully received.

It cannot be determined whether a wire chief's desk is desired to be used for the purpose of phantom facilities on the existing farmer's line. No doubt what is needed is a testing desk, as it is stated that testing is now being done with a Wheatstone bridge. The desired results could be secured by a standard wall testing desk equipped with double scale voltmeter. This would cost approximately $——. This price does not include dry cells for testing purposes.

Regarding the test panel, it is not customary to connect rural lines through a panel of this character, as it would not be necessary to phantom any great number of these lines. The more economical arrangement would be, after determining the number of phantom circuits to be used, to place the coils on a shelf, running a cable to a terminal strip alongside of the present protectors, which are in use suitably arranged to cross connect to same. These cross connecting wires would then be run to the switchboard side of the arresters, so as not to interfere with the testing of the outside lines. This arrangement would not cost much, and the only investment would be the cost of the coils.

These queries indicate the kind of help the Service Department renders members of the association. At the present time the employment bureau has on file a letter from a competent manager who desires to make a change. Particulars may be obtained upon application.

Get Together Meeting at Waco, Texas.

A "get-together" convention of all of the managers of the various exchanges of nine Independent companies comprising the Texas Independent Telephone System was held at Waco, Texas, on November 7 and 8. About 50 managers and a number of representatives of connecting companies were present at the conference and all left at the close of the sessions feeling that the meeting had been of great benefit to all. Many of thos present were accompanied by their wives and families.

J. B. Earle, president of the Texas Independent Telephone System, delivered the opening address, giving the managers his ideas of the object of the meeting and as to what their individual duties are towards the company. He was followed by P. Kerr Higgings, general manager, who read a paper which, one of those present writes us, "gave the men more food for thought than they had ever had before in their whole lives." The paper was along the line of co-operation and it was pointed out that the companies and exchanges were now combined into one large organization and must work together along one definite line instead of each going his own individual way. He pointed out the necessity of each manager reporting to and receiving and carrying out the plans as laid out by the general office.

The afternoon session was in charge of the plant department headed by Plant Superintendent J. J. Cline and Engineer G. M. Peyton. This session closed with talks by several representatives of supply houses, who were present.

The second day's session was in charge of Secretary and Treasurer E. C. Blomeyer and Auditor Lyman S. Gardner, and was devoted to the discussion of accounting and general affairs. The session closed at 1 p. m. Each day the Brazos Valley Telephone Co. gave a luncheon party to the visitors, at the Exchange Hotel, and tickets to the Cotton Palace were provided by the management.

The Texas Independent Telephone System, which has headquarters in Waco, covers the large territory south from Fort Worth and Dallas to the coast, east to the Louisiana line and west beyond San Antonio. The system, which is composed of nine different telephone companies, all under one general executive head, gives service to approximately 30,000 telephones and operates several thousand miles of toll lines, being the largest Independent telephone system in Texas and the second system in size in the United States.

Cleveland Isolated by Snow for 48 Hours.

Snowbound since Sunday, November 9, Cleveland was absolutely isolated from the rest of the world for two whole days and nights. Not a telephone or telegraph wire remained to provide communication from early Sunday night to Tuesday night. More than 20,000 telephones were out of order and officials of the Bell Telephone company, and the Cuyahoga Telephone Co., estimated their losses Wednesday at between $350,000 and $400,000. It will be ten days before service is in any measure normal.

The Bell telephone company estimated that between 10,000 and 15,000 telephones on its lines were out of commission and the Cuyahoga placed its estimate at about 10,000. It was only through heroic efforts of volunteer linemen that the streets were cleared of live wires early. Though the wires strewed the streets in jumbled masses, sagged over trolley wires, and poles, were down all over the city, only one person was electrocuted. Linemen braved the worst blizzard in Cleveland's history to mount poles that swung in the wind. Snow was three feet deep. It was next to impossible to haul poles and cable through the streets to the spots where they were needed.

Telephone and telegraph wires throughout the state were paralyzed but Cleveland appears to have been the center of the storm and suffered worst.

Practical Subjects—Letters and Discussions

Ice in Lateral Causes Trouble.

The accompanying photograph illustrates a very interesting case of trouble which I had occasion to investigate in a small magneto plant.

The manager of this exchange had installed a lead covered (dry core) cable underground and in the middle of winter about one-third of the telephones working through this cable went "short." Having no apparatus for measuring

Cable Crushed by Ice in Lateral Pipe.

resistance, he was unable to locate it at the time, and it disappeared as mysteriously as it had come.

This happened two or three times, so he finally concluded that the cable might be kinked at the point where it left the pole and entered the duct, which was just common 4-inch drain tile.

Upon attempting to lift the iron pipe through which the cable ran to the underground, it could not be moved until the blow torch was applied for some time.

It was found that water had entered the pipe from above, as the upper end where the cable entered had been left uncovered. In some way the water had remained in the bottom to a depth of two or three feet, and had frozen when the cold weather came on.

Later, when the weather grew colder and the thermometer dropped below zero, the expanding ice would crush the cable so tightly as to short circuit various pairs, but the trouble would disappear as soon as the sun warmed the pipe a little.

The photograph shows the crushed cable with the pipe pushed up out of the way.

The enlargement at the lower end of the cable shows some of the ice which was not melted by the torch.

The cable was opened at this point, the injured pairs reinsulated with dry paper and a split sleeve wiped on.

Etna Green, Ind. F. L. Whitaker.

Essentials of Engineering Contracts.

In this article, I shall only attempt to take up the vital points pertaining to engineering contracts, and leases.

A contract is an agreement between two competent parties enforceable at law. In drawing up any contract, or in examining the validity of any agreement, the following points are to be noted:

1. Are the contracting parties competent?
2. Is the subject matter lawful?
3. Has a proper consideration been made?
4. Is there a general agreement?

Regarding the first point, namely, the competency of the contracting parties, in most states, infants, and minors, married women, lunatics and drunken persons are incompetent. This means that a contract signed by any of the above class of people would be unenforceable at law.

The second point, namely, the lawfulness of the subject matter, is dependent upon five considerations:

a. The contract must not violate any state or federal law.
b. It must not be contrary to common law.
c. It must not be forbidden by public policy.
d. It must not be of such a nature as to produce any restraint of trade.
e. In most states a contract signed on Sunday, or on any legal holiday, is void.

In considering the third factor, namely, a proper consideration must be made to make a contract legal, the essential point is that there must necessarily be an act or forbearance of one party, given in exchange for the act or promise of another party. In some states a payment of one dollar, or more, is necessary to furnish the proper consideration.

The fourth point needs no special comment, as it is generally understood that any contract the nature of which is conducive to the restraint of trade, is illegal.

The validity of contracts signed on Sundays or legal holidays is so variable, according to state laws, that it will only be stated that it is a point worthy of especial attention, in order to assure an enforceable contract.

With these essentials in mind, an attempt will be made to point out some of the criteria to be observed in writing any contract. An engineering contract is closely allied with a specification and as the wording of a specification should be clear and concise, so should the language of a contract be clear, short and to the point, avoiding as much as possible any legal phrases, which at best tend only to make the contract difficult to understand. Following are the sections or clauses which every contract should possess:

1. An introductory or opening clause.
2. A complete enumeration and description of the parties concerned.
3. A concise description of the subject matter covering the nature of the work.
4. A statement of the time when the contract becomes operative and the limit of duration.
5. An enumeration of the documents which accompany the contract.
6. An exact statement of what is to be paid.
7. A proper attestment of the document.

If the above points are carefully noted in drawing up a contract, one may be well assured that the validity is unquestionable.

Chicago. Leonard V. Newton.

The Conservation of Distributing Frame Wire.

The economical disposition of short lengths of wire removed from the distributing frame on account of disconnections, transfers, etc., has always presented somewhat of a problem, and storerooms have often reported an accumulation of as much as 100,000 feet in lengths varying from 5 to 25 feet, states M. Greene in The Telephone Review. At a cost of one cent per foot, this represents a value of $1,000.

Wire chiefs have standing instructions to draw short pieces instead of new coils, as much as possible, but because of the amount of waste and the difficulty in sorting and handling, these instructions can not always be closely followed. It is obvious, therefore, that if a scheme could be devised whereby each central office would re-use all of its own "second-hand" wire, considerable saving to the company would result.

At a conference of Brooklyn wire chiefs of the New York Telephone Co., several plans were proposed and tried out, the one finally adopted being as follows:

1. A chart was prepared showing an outline picture of the main frame, drawn to a scale of one foot to the inch. Cable and pair numbers were indicated on the vertical uprights and line numbers on the horizontal strips. Across the face of the chart horizontal and vertical lines were drawn in red and purple ink alternately, one inch apart. By counting the lines passed along the route that any desired cross connection would follow, and adding 1½ feet for the depth of the frame, the length of wire required could be readily obtained, close enough for all practical purposes.

2. Four wooden pegs were mounted on a backboard in the form of a square, nine inches between corners, and the backboard attached to the wall in the rear of the main frame. This arrangement is used to coil and at the same time measure the pieces of wire removed from the frame. As the length of each turn in the coil is approximately three feet, the total length of wire in any coil can be easily checked by simply counting the number of turns.

3. A number of small harness hooks were also mounted on the wall in a convenient location, and each hook designated with the size of coil it was intended to accommodate. It was found impracticable to sort the wire into coils varying less than three feet in length and the hooks were therefore designated 6, 9, 12, 15, etc., the number depending on the size of the frame.

With this method of sorting, a piece of wire measured and found to be 17 ft. 6 in., would be placed on a hook where it would be available for a 15 ft. cross connection, with a possible maximum waste of 2½ ft. It is obvious that some waste is unavoidable unless very accurate measurements are made. This, however, would require more time on the part of the men operating the scheme, and the increased cost would probably more than offset the value of the short pieces saved.

The scheme outlined above was installed in the Bushwick central office and after a year's trial it was found that the wire chief was able to re-use, without handicap, all of the second-hand wire removed from the frame. Moreover, with all short pieces measured and coiled in definite lengths, the tendency to use a 20 ft. piece for a 14 ft. cross connection, thereby creating a junk length, was eliminated. It was found also that wiremen engaged in making large transfers were able to use the scheme to advantage.

During the months of September and October, 1912, at Bushwick, seven protector strips of 202 pairs each were replaced by seven 303 pair strips, the cross connections to the larger strips being made with new wire. Old wire removed, amounting to 9,332 feet, was measured, coiled and hung on the proper hooks. By November 15 all of this wire had been re-used by the wire chief and "back tap" men, with the exception of 32 lbs. of junk wire, representing 2,336 feet, all in pieces of less than three feet length and averaging about 18 inches. It seems fair to assume from this data that about 75 per cent. of the wire recovered can be economically reused.

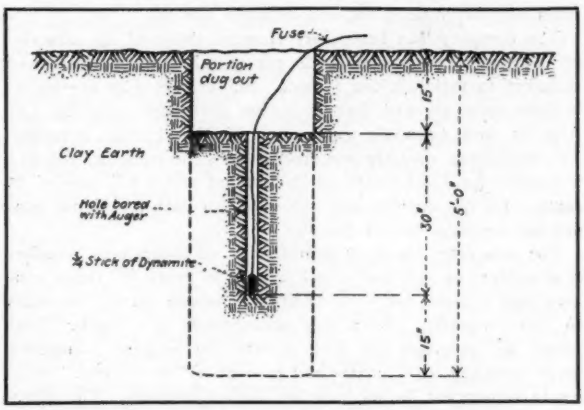
Another feature of the conservation scheme is the fact that if all old wire is re-used in the central office, there will be none available for cross connections in outside terminals. The process of flame-proofing the insulation on distributing frame wire, renders it hygroscopic, with the result that when used in the more exposed terminal boxes, considerable trouble is experienced from moisture. In some cases the cross connection wires have been found to be completely saturated with moisture, causing a heavy leakage to ground on all wires in the terminal. The trouble has been so extensive that in submarine cable houses and in all terminal boxes located near the coast, distributing frame wire has been replaced with wire having a weatherproof insulation.

Weatherproof wire costs no more than distributing frame wire and is undoubtedly superior for outside work. It has not been used generally, however, due to the fact that it was more economical, wherever possible, to use the short pieces of distributing frame wire which would otherwise have been wasted. If each central office is enabled to dispose of all its own distributing frame wire it will be possible to use weatherproof wire entirely in outside terminals and thus materially improve the insulation of the outside plant.

Blasting Holes for Wooden Poles with Dynamite.

Nearly every central station manager north of the Mason and Dixon line has had the unpleasant experience of paying prices, ranging upward from $1 apiece, for pole holes which had to be dug in frozen ground, says a writer in The Electrical World. The accompanying illustration shows the scheme which was used by the Marion Light & Heating Co., of Marion, Ind., for digging holes when the ground was frozen to a depth of more than 24 inches.

The hole was first topped and the earth removed to a depth of from 12 ins. to 15 ins., care being taken that the top of the hole was in conformity with the size of the finished hole desired. A long handled auger was then used



Method for Blasting Pole Holes with Dynamite.

to bore a hole slightly larger in diameter than a stick of dynamite to a depth of about 27 ins. or 30 ins. The charge, when placed in this small hole and tamped in and ignited, blew a neat round excavation as large in diameter as the portion which had been dug out at the top. With three-quarters of a stick of dynamite at the depth specified in the illustration, a hole 5 ft. deep was secured in the clay ground at an average saving of 15 to 20 per cent. over the cost of manual digging.

Telephone Men in the A. I. E. E.

The November issue of the Proceedings of the American Institute of Electrical Engineers reports that Fred E. Winslow, wire chief, Chicago Telephone Co., Chicago, was transferred to the grade of member at a recent meeting of the board of directors. At the same meeting the following were elected associate members: Lewis M. Bockoven, telephone engineer, Pacific Telephone & Telegraph Co., Los Angeles, Cal.; Melville G. Brown, president, Northern Telephone & Power Co., South Fort George, B. C.; Morton Sultzer, physical laboratory, Western Electric Co., New York; and Herman H. Veerhusen, engineering department, American Telephone & Telegraph Co., New York.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Want Rehearing in San Jose Case.

The Pacific Telephone & Telegraph Co. and ten of its stockholders have filed a petition with the California Railroad Commission, asking for a rehearing in the San Jose rate case, the decision in which is published elsewhere in this issue. The company states that the commission erred in certain calculations and that its figures do not take into consideration the actual value of the company's properties, its earnings and expenditures in the San Jose territory.

The stockholders of the Pacific company state that if the commission does not allow the company to make these annual payments the funds necessary must be taken from earnings which would otherwise be distributed to them.

California Rural Line Granted New Rate Basis.

The Sunland Rural Telephone Co., of Sunland, Cal., which operates a rural telephone line from Sunland to Glendale, connecting there with the Pacific Telephone & Telegraph Co., has been granted authority by the Railroad Commission of California to abandon its present basis of unequal rates to stockholders and non-stockholders and to charge a lower uniform monthly rate to all, and uniform toll rates.

The company has heretofore charged those of its subscribers who are stockholders $2.50 per month and an assessment sufficient to maintain the system. Subscribers who are stockholders were allowed free switching privileges with the Los Angeles and Glendale exchanges of the Pacific company. To subscribers who are not stockholders the company charged five cents for local messages in Sunland and a toll rate of 15 cents for three minutes and five cents for each additional minute for messages to Los Angeles.

The new rates are $1.50 monthly for all subscribers, whether stockholders or not, and a toll rate of 10 cents for three minutes and 3 cents for each additional minute on all messages to Los Angeles. Under this arrangement the Pacific Telephone & Telegraph Co. will operate the Sunland company's local terminals at Glendale and provide a "two-number" service in return for 50 per cent. of the toll charges. The directors of the Sunland company satisfied the commission that this arrangement would put the company on a much better basis, do away with the necessity for further assessments and remove the discrimination previously existing in the rates.

Ex-Governor Yates Appointed on Illinois Commission.

Richard Yates, former governor of Illinois, has been appointed a member of the Railroad and Warehouse Commission of Illinois to succeed G. DeF. Kinney, at a salary of $6,000 a year. It is understood that when the new utilities commission takes over the duties of the Railroad and Warehouse Commission Mr. Yates will be elevated to the new board with a salary of $10,000.

Wisconsin Commission Chairman, Wanted for Federal Job.

John H. Roemer, chairman of the Wisconsin Railroad Commission, has been tendered the position of special attorney to the federal commission that is to make a valuation of all of the railroads in the United States. Mr. Roemer declines to state whether he will accept the position. The state commission pays a salary of $5,000 and the federal commission a salary of $7,500. Mr. Roemer has been a member of the Wisconsin commission for five years. He was appointed to succeed Judge John Barnes, when he resigned, and was recently reappointed for a six year term by Gov. McGovern. Should he accept the new position he would be the federal attorney to pass upon the questions of law in the valuation of all of the railroads.

Wisconsin Company Ordered To Improve Service.

The Wisconsin Railroad Commission has directed the Elderon Telephone Co., of Elderon, Shawano county, to improve its service immediately and to make a monthly report to the commission of all trouble that has been reported on its lines. The commission says in its opinion that it is formulating standards for telephone service, but that it deems immediate action necessary in this case. The investigation furnished to the subscribers of the telephone company at Eland, Elderon, Galloway, and Wittenberg was made by the commission on its own motion.

Physical Connection Case in Nebraska.

E. M. Morsman, attorney for the Nebraska Telephone Co., has filed a brief in the supreme court on the question of the jurisdiction of the court in cases appealed direct from the railway commission to the supreme court. Holmes & Delacey, of Lincoln, Mo., have asked permission to file a brief on the same subject and the court has asked the attorney general to express his opinion. The law prior to 1911 provided for appeals from the commission to the district court in two forms, either by a suit which was in the nature of an injunction to prevent the commission from enforcing its orders, or a mandamus suit against the common carrier, in which the defense could raise all questions which applied to the legality of the order.

Mr. Morsman said he liked the old law better than the present one which provides for appeals direct to the supreme court. He does not express himself positively on the question of jurisdiction, but takes the ground that the railway commission is legislative in character and whether or not an appeal can be taken from that body direct to the supreme court will depend upon the supreme court's interpretation of the term "appellate jurisdiction" used in the constitution.

The attorney general will contend that the supreme court has original jurisdiction in such cases because the state is in fact a party to the suit. W. J. Courtright, representing the Hooper telephone company, has already filed a brief in support of his motion to dismiss the appeal of the Nebraska Telephone Co. from the order of the commission requiring it to connect with the Hooper telephone company's lines.

Nebraska Commission Allows Rate Increase at Geneva.

An increase in rates of the Lincoln Telephone & Telegraph Co. at Geneva, Neb., has become effective by order of the Nebraska Railway Commission. The increase will apply to business and farm line telephone service but not to residence rates. The rates will be as follows: Business, individual, $3 per month, an increase of 50 cents; two-party, $2.50, an increase of 50 cents; farm line service for business use, $2 instead of $1.50; farm line residence service $1.50 instead of $1. City residence rates will remain $1.50 for individual and $1.25 for two-party lines.

The commission finds that the plant is worth $31,059, which it says is $11,600 less than the value of the two properties before consolidation. Earnings under the new rates are estimated at $11,286 per year, as against expenses of $9,122, leaving $2,164 as net earnings, which would give almost 7

per cent. dividends on the plant value. The commission says that it has not allowed for depreciation, but this will be taken care of by increasing the income or reducing the cost of operation.

City patrons are required to pay their monthly bills in advance, at the company's office, and rural patrons must pay for three months in advance. Outside of the city limits, there will be an extra charge of $5 a year for each quarter mile of pole line ofr individual, and $3 for two-party telephones.

If two or more parties use the same telephone, as in boarding houses, residence apartments and the like, the company is allowed to charge $1 per month extra. Extension sets will be charged for at 50 cents to $1 a month extra, and extension bells 25 cents additional.

World's Highest Competing Rates in Pittsburgh?

Testimony in a recent hearing before Judge R. S. Frazer, of Pittsburgh, in the injunction proceedings of the chamber of commerce of that city against the Central District Telephone Co. to prevent discontinuance of unlimited service contracts now in force was to the effect that the rates are higher for unlimited service in Pittsburgh than in any other city in the world where competition exists, the rate being $125 a year. It was declared that the change which the company desires to put into effect would increase the rates from 50 to 200 per cent.

Robert C. Hall, director of the Pittsburgh & Allegheny Telephone Co., testified that his company, which has the same physical difficulties to overcome that the Bell firm has, is giving unlimited service to business houses for $48 a year and to private homes for $36 a year and is making money. He stated the $125 rate is the highest rate charged in the United States in cities where there is competition. He said the proposed increase probably would bring the Bell system in annual income of $8,000,000, stating that the average charge per call would be about 4 cents. He said he considered 1 cent each profitable, using as the basis of his estimate the cost which the Pittsburgh & Allegheny Telephone Co. finds necessary.

Mr. Hall also said the company had no accurate way, except by human effort, to count the number of calls which pass through a firm's telephone. His statement showing that errors might be made was verified by the testimony of various Pittsburgh business men.

Attorney Patterson, representing the defendant company, contended that the flat rate is obsolete and unfair in that a person using the telephone but little is compelled to pay as much as those using it frequently.

Bell Appeals Case of New Castle Grocerman.

The Bell Telephone Co. has appealed to the superior court of Pennsylvania the case from Lawrence county in which the county judge held that the company must abide by a contract entered into many years ago with a grocer, guaranteeing him an exceedingly low telephone service "so long as competition exists in the telephone business in New Castle, Pa." The company increased the rate from $18 to $42 per year and the grocer secured an injunction forbidding the company to remove his telephone and refused to pay over $18 per year. The case is being vigorously fought on both sides.

Bell Companies Deny Collusion at Cleveland.

The Cleveland Telephone Co. and the Central Union Telephone Co. have filed answers with the Ohio Public Utilities Commission denying collusion with the Cuyahoga Telephone Co. as charged by Harrison B. McGraw and Director of Public Service Springborn. Denial of any plan to suppress competition and ultimately to effect consolidation was also made. It was urged that no ruling be made on Mr. McGraw's complaint inasmuch as no consolidation was contemplated. They contended the time to take up that question would be when a consolidation is planned and application therefor made to the commission.

Appraisal of Bell Plant at Spokane.

The engineers of the Washington Railroad Commission have completed the work of appraising the plant of the Spokane branch of the Pacific Telephone & Telegraph Co. and have placed the valuation of the plant at $2,600,000. The first of the commission's hearings as to the reasonableness of the company's rates was scheduled for November 12.

Wisconsin Commission Rules As To Toll Divisions.

The Railroad Commission of Wisconsin has refused to grant a petition of the Ettrick Telephone Co. to require the LaCrosse Telephone Co. to charge it for toll service only on the same basis as that enjoyed by the Western Wisconsin Telephone Co., and the decision has several points which serve to further make clear the boundaries of the commission's authority in adjusting the relations existing between telephone companies in physical connection and toll division cases.

The petitioner, the Ettrick Telephone Co., is a mutual company and maintains an exchange in Galesville and another in Ettrick. Connected with these exchanges are its rural lines. Each subscriber owns one share of stock of the par value of $40 and is obliged to pay annually an assessment of $5 for the maintenance and operation of the plant. The subscribers of the mutual company have toll service over the lines of the LaCrosse Telephone Co., connection being secured through the Western Wisconsin Telephone Co.'s toll board at Galesville. For this service the LaCrosse company collects 75 per cent. of the tolls received by the mutual company from its subscribers for the use of the toll line to LaCrosse, but makes no charge to the Western Wisconsin Telephone Co., for messages going from Galesville to LaCrosse. The mutual company asked that it be placed on the same basis as the Western Wisconsin company—that the latter either be charged 75 per cent. of its tolls or that the mutual company be served on the same free basis as the Western Wisconsin company.

In answering the petition the LaCrosse Telephone Co. admitted the 75 per cent. arrangement and declared it to be its usual or universal charge to all connecting companies, excepting the Western Wisconsin company. It alleged that the latter allowed revenue to it in other ways; that the Western Wisconsin company owns and operates nine different exchanges in Trempealeau and Buffalo counties, which are connected by metallic toll lines; that the Western Wisconsin company has in effect two rates, one covering the entire system outside of toll line service, and another rate to subscribers who desire toll service to LaCrosse and Winona; that if the LaCrosse company were to charge the Western Wisconsin company at the message rate, this would involve a change of rates of the entire system of the Western Wisconsin company; that the latter company does not enjoy free calls to LaCrosse, because the LaCrosse company retains all receipts for messages originating on the LaCrosse system and passing to the nine exchanges of the Western Wisconsin company, which receipts are in lieu of the 75 per cent. division plan.

It is further shown that the Western Wisconsin company has exchanges in Galesville and Ettrick. The total number of its subscribers is approximately 1,700, of which 1,100 are rural subscribers. In Galesville and in Ettrick its exchanges compete with those of the mutual company. The charges to its subscribers are $12.50 for service over the entire system and $25 per annum for service over the entire system including toll line service to LaCrosse and Winona, Minn.

The toll line extending from LaCrosse to Galesville is owned in part by the Western Wisconsin company and in part by the LaCrosse company. The former owns and maintains that portion of the line between Galesville and Hunters Bridge over

the Black river, and the LaCrosse company owns and maintains that portion between Hunters Bridge and LaCrosse. The Western Wisconsin company also owns the toll line leading from Galesville to Winona, where it connects with the Northwestern Telephone Co. The Western Wisconsin Telephone Co. charges all subscribers who are not upon the flat rate of $25 per annum, the same toll message that is paid by the subscribers of the mutual company, the petitioner. The arrangement between the LaCrosse and Western Wisconsin companies is such that each retains all toll revenues originating on its own lines. In commenting upon this the commission adds:

This arrangement between the companies seems to be satisfactory to both. In making such apportionment of the joint tolls the companies are acting entirely within their right and so long as the apportionment does not result in prejudicing the subscribers or patrons of either company, their action in the matter is not subject to revision or modification by public authorities. Even where physical connection of lines is enforced under the statute, it is contemplated that the companies shall agree upon the apportionment of the joint tolls, and it is only in case of failure of agreement that the commission has authority to make the apportionment.

The petitioner insists that it be placed upon the same basis as the Western Wisconsin Telephone Co. respecting the division of tolls with the LaCrosse Telephone Co. This seems impossible, as the petitioner is a mutual company, has no interest in the toll line, and merely desires the connection for the convenience of its patrons. If the petitioner were not required to exact toll charges of its subscribers and patrons, the Western Wisconsin Telephone Co., in order to protect its business, would be obliged to refrain from charging its subscribers either the $12.50 additional annual rate for toll service, or 15 cents per message, according to its schedule. Manifestly this would be unfair to the Western Wisconsin Telephone Co., because its toll line facilities in such event would be used to prejudice its revenues. A telephone company, no more than an individual, can insist that a connecting telephone company furnish its toll line facilities free of charge, for that would be already taking property without compensation, and meet the condemnation of constitutional provisions. In compelling physical connection between two telephone systems, it must be remembered that the statute provides for reasonable terms and conditions. It could not validly provide that one company should give another the use of its toll lines without compensation.

In the instant case, as has already been shown, the LaCrosse company and the Western Wisconsin company are the owners of the toll line in question. Under the circumstances the apportionment of the toll revenues between them is no criterion for judging the reasonableness of charges exacted of a connecting company desiring the toll line facilities but having no proprietary interest therein.

If the LaCrosse company did not require the petitioner to exact a toll from its subscribers for toll service, the result would be that the subscribers of the petitioner would receive toll service free, while the subscribers of the LaCrosse company would be obliged to pay a toll service charge to communicate with the subscribers of the petitioner. This results from the fact that the petitioner is a mutual company. We fail to see any unjust discrimination against the petitioner as charged in the petition. Under the circumstances the petition will be dismissed.

Summary of State Commission Hearings and Rulings.

California.

October: Decisions rendered granting to the Reedley Telephone Co. permission to issue $2,500 of stock; and to the Dos Palos Telephone Co. to issue $1,273 of stock.

Canada.

November 8: Petition of Belmont Telephone Co. for authority to increase tolls on account of night service having been installed, granted by Ontario Railway and Municipal Board. Subscribers who are not stockholders and are charged extra because of this will be allowed to purchase stock and use telephones at the same rate as present stockholders.

November 8: Residents of Binbrook and Barton who use the Rural Telephone Co.'s line have entered a protest against the company's application for permission to increase its rates from $18 to $23 a year.

Georgia.

December 10: Hearing continued from October 14 in the case of the city of Columbus against the Southern Bell Telephone & Telegraph Co., which in November, 1912, advanced its rates 50 cents a month under an alleged agreement with the city to advance rates automatically when it had secured 2,500 subscribers. It is stated the company will be required to submit proof of the actual cost of its plant, operating expenses and other data.

Indiana.

November 17: Hearing on application of Cumberland Telephone & Telegraph Co. for authority to raise rates in southwestern Indiana.

November: Hearing continued from October on the petition to establish physical connection between the Central Union Telephone Co. and the Lafayette Telephone Co. has been continued. Frank Cuppy, secretary and treasurer of the Lafayette company, expresses the willingness of his company to meet the will of the people. The Central Union company is opposed to it, and if ordered to make the connection, has declared it will appeal the decision.

Missouri.

December 4: Hearing reset from August 26 into case of J. Ben Sims vs. Columbia Telephone Co.: Rates and service.

New York.

November 14: Hearing at Buffalo on application by Federal Telephone & Telegraph Co. for a determination of rates in Buffalo.

November 14: Hearing at Buffalo on complaint of William De Courcy Rose against the Federal Telephone & Telegraph Co. alleging discrimination in certain telephone contracts and delay in the furnishing of service.

November 20: Date fixed for filing of answers by New York Telephone Co. and Federal Telephone & Telegraph Co. in inquiry, made on petition of the city of Hornell, into advances in toll rates in Hornell and other places in the southern tier, including Elmira.

South Dakota.

Date not fixed: Hearing on complaint from from Highmore as to telephone service in which the Hyde County Telephone Co. is defendant, and an application of Hyde County Telephone Co. for an increase in telephone rental rates. Depositions have been taken and hearing will be fixed as soon as inventory of plant has been filed.

Date not fixed: Hearing on petition of Northwestern Telephone Exchange Co. for increase in telephone rental rates at Sioux Falls, with consolidation of New State Telephone Co. and the Northwestern Telephone Exchange Co. One hearing has been held and final hearing will be held as soon as company has filed inventory and other information required by commission.

December 5: Hearing at Pierre on complaint, filed on April 25, 1913, in the case of the Worthington Electric Co., Worthington; Groton-Ferney Mutual Telephone Co., Groton; Conde Telephone Co., Conde; White Telegraph Co., White; Grant County Telephone Co., Milbank.; Rural Telephone Co., Sherman; Moody County Telephone Co., Flandreau; Beresford Telephone Co., Beresford; Steininger Telephone Co., Parker; Canton Co-operative Telephone Co., Canton; Redfield Telephone Co., Redfield Hudson Telephone Co., Hudson; plaintiffs, versus the Dakota Central Co., the Nebraska Telephone Co., the Missouri Valley Telephone Co., and the New State Co., defendants.

Washington.

November 17: Hearing at Seattle on long distance rates of the Pacific Telephone & Telegraph Co.

December 13: Long distance tariffs at Pacific Telephone & Telegraph Co. suspended until this date.

Wisconsin.

November 6. Order directing Elderon Telephone Co., Elderon, Shawano county, to improve service.

November 6: Order refusing petition of Ettrick Telephone Co. that the Lacrosse Telephone Co. be required to charge for toll service only on the same basis as that enjoyed by the Western Wisconsin Telephone Co.

November 18: Hearing on application of Mineral Point Telephone Co., Mineral Point, Wis., for authority to increase rates.

November 18: Hearing on petition of the Linzy-Brook Telephone Association for physical connection with the Cecil-Green Valley Telephone Co.

November 25: Hearing in case of Belmont & Pleasant View Telephone Co., et al vs. White Oak Telephone Co. and also the same company vs. the Wisconsin Telephone Co., LaFayette Co., Telephone Co., intervenor.

November 25: Hearing on application of the LaFayette Telephone Co. for an order fixing uniform service, rates, rules and regulations among the telephone companies in LaFayette county, and for other relief.

Sparks from the Troubleman's Department

"Beat It."

If there's a subscriber you can get—
"Beat it."
He may be the best bet yet—
"Beat it."
Every new one you bring in
Brings the "old man's" cheerful grin.
Don't hold back, but go like sin—
"Beat it."

If there's a dollar you can grab—
"Beat it."
Don't lay down and start to "crab,"—
"Beat it."
Every dollar that you get
Makes the earnings a good bet,
Even though it makes you sweat—
"Beat it."

If a "short's" out on the line—
"Beat it."
What's the use to growl and whine?
"Beat it."
Though you think the boss a "wart,"
And you cuss and rave and snort,
That won't help to clear the "short"—
"Beat it."

If we're going to reach the top (we must)
"Beat it."
Keep a going, never stop (only)—
"Beat it."
Let the knockers rave and yell,
And their anvil chorus swell,
Tell them all to go to Hoboken, Saskatoon, Muscogee, or any other old place, and
"Beat it."

Professor Would Improve Telephone Manners.

Professor Prewin has many pet schemes for relieving human misery, says L. H. Robbins in the Newark (N. J.) News, but the daring of them all just now is his plan to improve telephone manners. Says he:

"The telephone company has done much to promote courteous behavior in telephoning. I have never known a case of impatience or impudence among its employes. They are trained to keep their temper, to bear meekly the petulance of subscribers and to answer politely, no matter what the provocation. An archangel cannot show a better percentage of self-control at the end of a busy season than central can, and society women could find no better models of lady-like deportment than the telephone girl. But the example set at headquarters has not percolated through the community to any great extent. Rudeness still persists; and rudeness among people prosperous enough to rent telephones—people from whom the world expects ideal conduct—is an especial pity.

"My plan is to require prospective telephone subscribers to produce proof that they are courteous and considerate in their daily life. I would hire a reporting agency to investigate all applicants for telephone service, and until the applicants had passed the test and signed a pledge committing themselves to politeness in using the telephone I would not install instruments for them."

The pledge would be simple and would read somewhat as follows:

I and the members of my household do solemnly promise when calling another subscriber never to begin the conversation by demanding, "Who is this?" We further agree to say, "I beg your pardon," sweetly and sincerely when the wrong number is called for us.

Frequently Dr. Prewin has an experience like this: His bell rings. "Hello," he says; and hears a voice at the other end ask:

"Who is this?"

"This is Blank Brooks, 234-J," he answers.

"But I say, who is this?"

"Blank Brooks, 234-J."

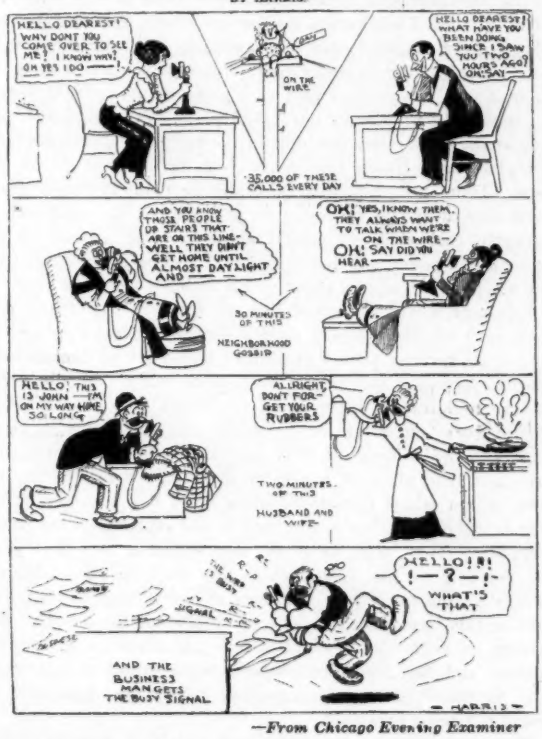
"I don't care about the number. Who is this talking?"

At this point the professor always hangs up the receiver.

"If people are so impolite as to begin a conversation by demanding to know who I am, I don't want to talk to them,"

"Aw! I Say!! Get Off the Line!!!"

BY HARRIS.


HELLO DEAREST! WHY DONT YOU COME OVER TO SEE ME? I KNOW WHY! OH YES I DO——!
ON THE WIRE
HELLO DEAREST! WHAT HAVE YOU BEEN DOING SINCE I SAW YOU TWO HOURS AGO? OH! SAY——
35,000 OF THESE CALLS EVERY DAY
AND YOU KNOW THOSE PEOPLE UP STAIRS THAT ARE ON THIS LINE— WELL THEY DIDN'T GET HOME UNTIL ALMOST DAYLIGHT AND——
OH! YES, I KNOW THEM. THEY ALWAYS WANT TO TALK WHEN WE'RE ON THE WIRE— OH! SAY DID YOU HEAR——
30 MINUTES OF THIS NEIGHBORHOOD GOSSIP
HELLO! THIS IS JOHN——I'M ON MY WAY HOME. SO LONG
ALLRIGHT DON'T FOR-GET YOUR RUBBERS
TWO MINUTES OF THIS HUSBAND AND WIFE
HELLO!!! !—?—!- WHAT'S THAT
AND THE BUSINESS MAN GETS THE BUSY SIGNAL
—HARRIS—

—From Chicago Evening Examiner

he declares. "I don't want such people for my friends. People would never rush up to me in the street and ask, 'Who are you?' They would inquire, 'Is this Professor Prewin?' But over the telephone they seem to think it is all right, to abandon their good manners. I don't think it is. I hold that the rules of ordinary conversation govern telephone talking. If a man should stop me in Broad street, or any other street and fire 'Who is this?' at me, I would walk straight past him and never give him a glance."

A Modern Supposition.

"Frederick," said the Sunday school teacher, "how many years did Methuselah live?"

Frederick looked nonplused.

"But see," she admonished, "here is this list I asked you to memorize. Methuselah: 969."

"Oh," said Frederick, deprecatingly, "is that what it means? I supposed that was his telephone number."—Woman's Home Companion.

CALIFORNIA COMMISSION AND A. T. & T. PAYMENT OF 4½ PER CENT.

(*Continued from page 26.*)

not being so liberal as to put an unwarranted burden upon the rate payer of any particular year.

I will now consider the two items also questioned by the auditing department of the commission. They are:

1. Excessive allowance for depreciation; and
2. Payment of 4½ per cent. of the gross earnings to the American Telephone & Telegraph Co.

Allowance for Depreciation.

I have already discussed certain aspects of this question in dealing with the engineering matters here under dispute. Both the engineer and auditor of the commission are of the opinion that 6½ per cent. set aside annually for depreciation is excessive. It is in evidence that within a very few years an amount has been produced from the 6½ per cent. depreciation fund which shows that the percentage is excessive. The witnesses reach this conclusion by the following method of reasoning: As already pointed out herein, the amount in the depreciation fund should in a matured utility be sufficient to cover the amount represented by depreciation which is not taken care of annually. It is a well known fact that in a going utility after a certain amount of depreciation has taken place, the percentage does not increase. It is testified that in the telephone plant ordinarily the plant as it stands represents about 85 per cent. of its cost new. Therefore, in a matured telephone plant the depreciation fund should always represent 15 per cent. of the total amount properly chargeable to capital account. The auditor of the commission points out that 15 per cent. has been produced from the 6½ per cent. annual depreciation within a very few years.

I assume it will be agreed that the constant sum required to take care of depreciation should not be produced in one or two years because such a procedure would lay an unwarranted burden upon the rate payers who were patrons of the utility during such time. Here again the exact period over which this depreciation should be ordinarily created is hard to determine but the evidence in this case shows that if depreciation does not take place at a greater rate than it has during the time within which this depreciation fund has been set up the rate is too high. This is admitted by the representatives of the company. They urge, however, that within a very few years the property of the defendant in this state has been doubled and that from the nature of things the percentage of depreciation in this new property does not represent the average percentage of depreciation which will be necessary to be provided against, and that when the property has reached an age which may be called its average age that the 6½ per cent. will be found not to be excessive.

This contention of the defendant appeals to me as having some merit. On the other hand it is likewise in evidence that the extensions of this company are regularly being produced from this depreciation fund. To be sure, it is urged that this is a mere loan from the depreciation fund to the capital account for new construction, but the condition developed here is one which must be watched very carefully, else it will bring about a condition wherein the property, in extensions of this company, will be produced from the rates, a consummation devoutly to be wished from the standpoint of many utility men and seriously urged by some as justifiable. I have no hesitancy, however, in saying that it seems to me fundamental that no such use of depreciation funds should be permitted, unless the funds used in such capital expenditures are carefully accounted for and scrupulously returned to the proper fund. I am disposed to be careful in the handling of this depreciation matter. I believe it is very advisable both from the standpoint of the public and the utility, that a proper and adequate depreciation fund be established annually, but of course this depreciation fund should be used for the purposes which give warrant for its collection and not to produce more property upon which an earning will be asked.

The company urges that in other states larger amounts than 6½ per cent. have been allowed for depreciation, and cites cases from Canada, Nebraska, South Dakota and a few from Wisconsin where 8 per cent. has been allowed; also cases where 6, 6½ and 7 per cent. have been allowed; also reports of experts are referred to where amounts ranging from 5½ to 8 per cent. have been allowed.

It is difficult to determine the bearing of these cases without knowing all of the facts found to exist by the commission rendering the decision. Likewise it would be necessary for me to know on which side the expert in question was testifying before considering very seriously the amounts recommended by such experts. I say this in all seriousness, based upon experience.

In this case the only thing which raises a doubt in my mind as to the excessive amount of the depreciation fund provided, is the age of many of the properties of this company. The engineer of the commission basing his conclusion on a somewhat longer estimate of the life of the structures of the telephone company than the length of life for which the representatives of the defendant contend, advises that 4½ per cent. is sufficient. As I have said, historically 6½ per cent. is producing too much depreciation reserve, and it will be impossible to determine finally this matter until actual experience is behind such determination. The vice-president of the telephone company testifies that such actual experience has not been had anywhere to a sufficient degree finally to determine the proper depreciation amount. While I do not think this commission should in any case resort to what is known as splitting the difference, and while I believe that the present rate of depreciation is too high, still I do not recommend that we go as low as our engineer is of the opinion we could go. If error is to be made, I would rather it be in favor of an ample depreciation fund than against it. I therefore, will suggest a 5½ per cent. depreciation until such time as actual experience has determined such amount is too high or too low. In fact, the company has in times passed allowed 5½ per cent. as a proper amount of depreciation.

Payment to American Telephone & Telegraph Co.

I have no hesitancy in saying that any contract such as the one here in question should always be scrutinized with the utmost care. This is not meant to be a reflection on any of the local officials of the Pacific Telephone & Telegraph Co., but, as is well known, and is in evidence in this case, this company is absolutely under the control, through stock ownership, of the American Telephone & Telegraph Co. Contracts such as this are not made between parties equally competent to contract and they in many cases are mere devices for diverting excessive dividends from earnings. Here the parent company which controls entirely the destinies of this company, takes a 4½ per cent. slice off the top of the gross revenue of this company before anybody else gets a chance at such revenue. The Pacific company, defendant herein, urges that this is an actual expenditure and that as such must be allowed.

Of course this is not an accurate statement of the law. Excessive, unreasonable or improvident expenditures though actually made, may be disallowed by commissions and courts in rate fixing inquiries. This is so well established that it is not necessary to cite cases thereon. It is urged by the Pacific company that this contract is advantageous to it and cases are cited where other companies not controlled by the Bell companies have sought voluntarily to avail themselves of the provisions of this contract. It, of course, is true where any agency controls patented articles, that other agencies not in control of such articles may often desire to avail themselves of their use, and under the telephone situation in the United States it is not a matter of wonder that many Independent companies are

desirous of entering into arrangements with a company exerting the control over the telephone busin ss that the American Telephone & Telegraph Co. does.

The Pacific Telephone & Telegraph Co., while an independent corporation, is for all practical purposes a part of the American Telephone & Telegraph Co. Such being the case neither party to any contract between these two corporations legally independent but actually not, may be allowed to take advantage of such relationship to secure any earning whether through rates or otherwise that would not be permitted if such relationship did not exist. It is urged by the defendant that in addition to what is actually done for it by the American Telephone & Telegraph Co. there are certain things which might be done which are of value. I believe under the circumstances here found to exist, that the amount allowed to be charged as an expense against the Pacific telephone company for services performed whether under contract or otherwise, in favor of the American Telephone & Telegraph Co. should be limited strictly to what is actually done and the lowest reasonable amount for such service permitted.

Every presumption, except the barest legal presumption, should be entertained against the fairness of such a contract. The stockholders of the American Telephone & Telegraph Co. and the Pacific Telephone & Telegraph Co. being the same it, of course, is to the interest of such stockholders to divert as much money as possible into funds that may be used as dividends in excess of the amount which may be lawfully earned. Because of this situation and the very natural human and corporate tendency to prefer one's own advantage, I believe it is the duty of this commission, as I have already said, to limit the amount which shall be a charge for the service rendered by the American Telephone & Telegraph Co. to the lowest fair value of the service actually rendered.

For the exchange here in question there was paid $10,122 to the American Telephone & Telegraph Co. during the year last past, this being at the rate of 4½ per cent. of the gross revenue. From the investigation made by the auditor of this commission and submitted in evidence, the only service rendered during this year for the exchange in question was the use of exchange station instruments numbering 1,468, which are valued by the companies themselves at $2.92 each, which would represent a total valuation of $21,806.56. The American Telephone & Telegraph Co. contends for a rental value of 24 per cent., which includes depreciation, repairs, up-keep, interest, etc. This would allow this company $5,233, assuming this 24 per cent. earning not to be excessive, which I am not prepared to admit, which would mean a reduction of $4,888 on the 24 per cent. basis of earning. I believe if anything, this exceeds the maximum which this company should be allowed to impose as a charge upon its patrons in San Jose. In passing from this branch of the inquiry I can not refrain from saying that while my inclination is always to impute property motives to persons and corporations, still these intercorporate relationships with their attendant possibilities for fraud never have appealed to me, and I would most respectfully suggest to the utilities involved that open, fair, arms-length dealings would be better not only for the public but for the utility in the end.

Advance Deposits for Telephone Service.

I believe the time has come when this commission should take a stand with reference to the deposit for telephone service. This practice, as it has been carried on in this state, has always amounted to a discrimination against the poor patrons. The company has at its election required the putting up of a deposit, and the testimony shows that it requires this deposit of those whose financial ability it questions, who are usually those of small means. Such burden put upon the subscriber of small means is absolutely unjustifiable and the only basis upon which this commission should even consider the toleration of the continuance of this practice is that it be made absolutely uniform as to the rich as well as to the poor; the large users of telephone facilities as well as the small should be required to put up a deposit which should have a proper relationship to the loss which the company would incur if the telephone is only used for a short time and with the extensive facilities for large users this loss would be greater and the deposit required should be likewise greater.

I recommend that in the order the company be required to discontinue this practice of requiring deposits within this exchange area and that it keep accurate accounts of the amount of expense which is added by reason of the discontinuance of this practice during the six months immediately following the effective date of this order. If such accounts show, as I believe from the evidence will not be the case, that by reason of the discontinuance of this practice the telephone company's expenses have increased, then an added amount should be allowed in the rates.

Complaint is made that the bills are required to be paid in advance. I believe the practice of requiring bills to be paid in advance is entirely reasonable and that the company is amply justified in this practice.

Estimated Earnings Under Commission's Findings.

Assuming that the cost of reproduction of property as modified by resort to actual cost, where such cost may be determined, less the depreciation which has been found to have taken place, is a proper basis upon which to fix rates, which I do not decide nor consider necessary to decide in this case, we would have a figure of $826,254 as representing the property of this company located within the exchange area. From actual computations based upon the rates which are established in the order, there will be an annual reduction brought about by the application of such rates of $12,237, which would leave a net return of $50,186, assuming the statement of revenue and expense submitted to be correct, which is a little more than 6 per cent. on such value. As already pointed out, however, I have adopted 5½ per cent. for depreciation rather than 6½ per cent. as urged by the defendant and 4½ per cent. as urged by the engineer for the commission. This will add $3,354 to the net earnings of this company in this area. Likewise I have taken 2½ per cent. instead of 4½ per cent. as the proper amount to be charged for the services rendered by the parent Bell company, and this would add $4,888 to the net revenue, making a total addition to the net revenue from these two sources of $8,242, which would make a total of $58,428. Again, assuming $826,254 to be the value of this property, this corrected net earning would result in a net earning of 7.07 per cent."

Commission's Schedule of Rates.

The rates ordered by the commission are as follows:

Business, unlimited service.	
One-party (desk or wall set)	$4.50
Two-party (desk or wall set)	3.00
P. B. X. trunks, unlimited service.	
No. 1 business commercial and No. 1 business hotel.	
For first two-way trunk	$6.50
Each additional two-way trunk	4.875
Each outgoing trunk	4.50
No. 2, business commercial.	
For first two-way trunk	$6.50
Each additional two-way trunk	4.875
For first outgoing trunk	4.50
Each additional outgoing trunk	3.375
Residence, unlimited service.	
One-party (desk or wall set)	$2.50
Two-party (desk set)	2.25
Two-party (wall set)	2.00

Fire Destroys Exchange at Knoxville, Pa.

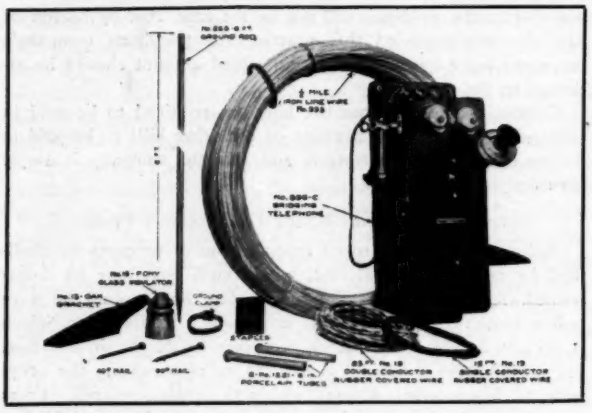
The exchange of the Gilbrook Telephone & Telegraph Co. at Knoxville, Pa., was destroyed last week by a fire which wiped out 13 business places, the post office and 10 residences.

From Factory and Salesroom

Conventions: Eastern Pennsylvania Independent Telephone Association, Williamsport, November 19; Kansas Independent Telephone Association, Salina, December 9, 10, 11

Private Line Telephones for the Farm.

That every up-to-date farmer needs a private line telephone system in order to enable him to be everywhere on his farm at once and that every rural telephone manager who has the farmer's best interests at heart, will help him to have one installed, is what the Stromberg-Carlson Telephone Mfg. Co. is pointing out in an illustrated folder that has just been issued. The Stromberg-Carlson private line telephone system, says this circular, brings the whole farm to the farmhouse door. It does more than just save the farmer hundreds of dollars each year. It brings him the biggest possible benefits from his telephone and takes away his last bit of drudgery on the up-to-date farm. It makes 500 acres as easy to manage as five and saves more money, time and trouble than any other "implement" on the farm.



Complete Equipment for One Party Line Telephone.

The circular goes on to say that the private line system is a necessity on a big farm, and the means by which many a small farm may grow to be a bigger and better one. On just the regular run of farm detail it saves its small cost many times over in a single year and in case of emergency such as fire or sickness, it may save thousands of dollars and the lives of the family. With a private line system the farmer can run his farm from the house. Without stepping outside the farmhouse door, he can give orders to his help in the barn, the dairy, the tool house, or even the fields, no matter how far off or scattered they may be. He can have the horses hitched and brought to the door; send the men from one field to another, direct the plowing, get quick reports from the dairy, or go out into the fields and still be within reach of his wife's voice or in touch with the "hands" at the other end of the farm.

Many rural citizens in planning private or community telephone systems have been deterred by the lack of knowledge of proper cost estimating. This work looks very simple to the telephone man, but to the average farmer the question looms up very large.

To make this work of securing a proper amount of the right materials and apparatus much easier, the Stromberg-Carlson Telephone Mfg. Co. has issued this general circular covering the farm line proposition in an unusual way. Several illustrations, one of which is reproduced herewith, are shown which clearly explain the methods of constructing the line and wiring the houses.

A departure has been made from the usual practice of quoting upon the supplies, a lump sum being named for each subscriber's station outfit, including telephone, wire, tubes, ground rod, etc. Likewise, a price is quoted for each mile of line fixtures, which comprises the wire, brackets, glass insulators and other necessary materials. In this way the prospective customer in placing order simply indicates the number of telephones wanted and the number of miles of line required.

The circular describing these standard outfits is of keen interest to every telephone man. If you have not received a copy write to the advertising department of the Stromberg-Carlson Telephone Mfg. Co. at Rochester, N. Y.

The Coffey System of Accounting is Popular.

The Coffey System & Audit Co., Indianapolis, Ind., has completed the annual audit of the Decatur County Independent Telephone Co., Greensburg, Ind. The office was checked over to the new manager, F. S. Chapman.

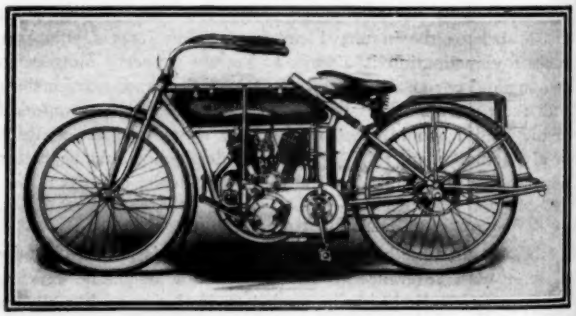
This audit company is also making an audit and installing a system for the Stephenson County Telephone Co., Freeport, Ill.

The Coffey System & Audit Co. has completed the revising of all of its forms and blanks to conform with the Interstate Commerce Commission schedule of accounts, even as to account numbers, and its forms also conform to the requirements of the accounting systems of the various state commissions.

J. W. Coffey, the head of the company, is installing an office system for the new Independent Telephone Association of America in its offices in Chicago.

The Flying Merkel Motorcycle Line.

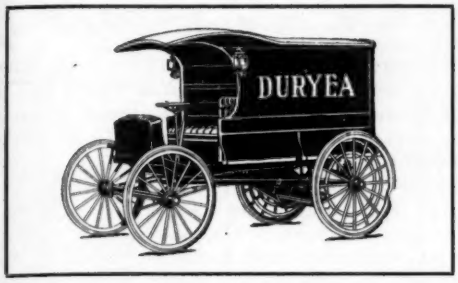
The Miami Cycle & Mfg. Co., of Middletown, Ohio, has just decided on a very important change involving a considerable reduction in the price and at the same time increasing the quality of its Flying Merkel line of motorcycles. All machines will be fitted with luggage carrier, foot boards and foot brake without additional charge. The company is now delivering 1914 models and is in a position to make immediate shipment of all models. The company's machines include four and seven horse power machines with belt or chain drive and single cylinder with clutch, as well as the famous self-starting "Yellow Jacket" model.



New Model Flying Merkel Motorcycle

Duryea Light Trucks With Roller Drive.

The Duryea Motor Co., of Saginaw Mich., is offering this year what the company believes to be the most practical light motor truck ever shown. The weight of the chassis is only 900 pounds without body. It may take a light open body—in which case it would be especially serviceable as a trouble



The Duryea Light Truck.

wagon in the country districts—or either a solid panel body or a covered body with screens and curtains at the sides and rear—in which form it meets the requirements as a means of delivering telephone sets, directories, etc., in city service. With the heavier body its load capacity is 800 pounds and with the lighter body 1,000 pounds. It is stated that on good roads a considerable overload may be carried, as the frame wheels, tires and similar supporting parts are amply strong.

A special feature of this truck is the use of the Duryea roller drive, which does away with the use of chains, gears, clutch, propeller shaft, universal joints and their many bearings. By means of this drive the power is transmitted direct from the two-cycle engine to drive rings on the rear wheels. The engine is two-cylinder, air-cooled, with a strong crank case. Magneto ignition is employed. High and low speed are permitted by the use of two sizes of rollers, while a small roller and reverse drive rings on the rear wheels, makes reverse movement possible. All drives are direct without loss of power and without complication, it is claimed. The truck has the advantage of high wheels and solid tires and is noteworthy for its simplicity, durability and small non-paying load. It is claimed that the vehicles are particularly well adapted for winter use, because of air cooling and easy starting.

The Duryea Motor Co. has recently acquired the entire motor truck business of its licensees, who formerly made this truck, and is now manufacturing and selling the truck under its standard automobile warranty. It is declared that no such simple construction has ever before been offered and that the use of these vehicles for more than two years has demonstrated their perfect trustworthiness in every respect. The company will be glad to send literature to any one interested.

Timely Circular on Matthews Guy Anchors and Specialties.

W. N. Matthews & Brother, St. Louis, Mo., have issued a timely circular containing reproductions from photographs showing some sleet storm results on telephone lines in Kansas, and one of which shows how a 6-in. 603R Matthews guy anchor saved a great deal more than its installed cost by stopping the break in a line due to an excessive strain of sleet and wind.

The company has also issued a circular showing the Matthews Baby boltless guy clamp with the observation: "Adopt me and I'll pay my own board and lodging." Every baby, it is declared, can't say this. A third leaflet calls attention to the Matthews telefault for locating all cable conductor troubles except "opens." This device, it is declared, will locate dead shorts or faults with a very high resistance and can be successfully used by any lineman who has a fair knowledge of electrical conditions.

"Unbreakable" Telephone Receiver Shells.

The development of a line of practically unbreakable receiver shells and mouthpieces is announced by General Insulate Co., 1008 to 1014 Atlantic avenue, Brooklyn, N. Y., the well known manufacturers of "Insulate." This will prove a boon to the telephone trade and supply a class of material that has been greatly desired for years. Considering the great yearly loss through breakage of shells and mouthpieces the new products of General Insulate Co. will doubtless attract considerable attention among telephone manufacturers.

The company believes that it has now made the most decided advance that has been made for a long time by composition manufacturers. Attention is called to the fact that the new "unbreakable" receiver shell is not a composition tube with a metal re-enforcement as a lining, which device the company has had on the market for some time, but it is, instead, a composition shell without lining. It is claimed that it is far stronger than the best grade of hard rubber or metal lined shell.

These receiver shells have a mirror-like finish which, it is declared, will never wear off. It is claimed that they are not affected by the moisture of the hands and so do not get green as rubber does and that they are not affected by oil or acid, heat or cold. They have great tensile and dielectric strength and when thrown down rebound like a rubber ball. The company has also developed this new material for telephone mouthpieces.

General Insulate Co. is rapidly increasing its facilities to take care of the business on the "unbreakable" shells and mouthpieces. Orders already coming in from all directions indicate a large demand for the new product.

"Two Ears Are Better Than One."

Some business men have more long distance telephoning to do than others and as an aid to improving the hearing have attached what is said to be a practical intensifier, to the regular telephone. The "Other Ear Receiver," as one telephone man ordered for this purpose, consists of a standard bi-polar watch case receiver and green silk two-conductor cord finished with two different styles of ends for terminating either in the base

Instrument With Double Ear Receiver

of the desk stand or on the exposed terminals of the hand receiver regularly furnished with a telephone set.

With a No. 26-A Stromberg-Carlson receiver, any telephone is, it is claimed, practically made a telephone booth. It is contended that the "other ear receiver" is a great help when the telephone is located in an open, noisy place or if a person

is slightly hard of hearing or has difficulty getting the accurate articulation of the other person's voice over long distance lines. The device can be quickly attached to the telephone before or after it is installed. With this outfit, introduced by the Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., a wire hook is furnished on which to hang the "other receiver" when it is not being used. The company has issued descriptive literature, illustrating its No. 26-A receiver with tinsel loop tips and its No. 26-B receiver with metal spade tips. Exchange managers and others interested in the device may obtain full information by writing for circular No. 412.

Ericsson's Thanksgiving Proclamation.

"The season of the year has returned when, in accordance with the reverent custom established by our forefathers, the people of the United States are wont to meet in their usual places of worship on a day of Thanksgiving, appointed by the Civil Magistrate, to return thanks to God for the great mercies and benefits which they have enjoyed.

During the past year we have been greatly blessed. We have lived in quietness undisturbed by the Bell telephone companies. It is true that we have had threats of war but nothing to disturb our equanimity. Peace and plenty of bounteous crops and of great industrial production animate a cheerful and resolute body of telephone men to all the renewed energies of beneficent industry and natural and moral progress.

Just at the present time the Ericsson Mfg. Co. has offered some standard telephones at a wonderful reduction which makes it easy to provide telephones for those new lines which the crops warrant. It is altogether fitting that this reduction should come at just the time telephones are needed.

Therefore, we hereby appoint Wednesday, the 26th day of November, as a day of general stock taking and of ordering all telephones that can be used during the coming winter—compact wood type at a 10 per cent. reduction and handmicro desk stands at a 20 per cent. reduction. We also appoint Thursday, the 27th day of November, as a day of general thanksgiving and call upon the people on that day, laying aside their usual vocations, to repair to their churches and unite in appropriate services of praise and thanks.

In witness whereof we have hereunto put our hands and caused the seal of public aproval to be affixed.

Done at the city of Buffalo, N. Y., this 13th day of November, in the year of our Lord, one thousand nine hundred and thirteen and of the Independence of the United States, the one hundred and thirty-eighth.

Ericsson Mfg. Co."

The Automatic Monitor System.

A circular which has just been issued by the Automatic Electric Co., Morgan and Van Buren streets, Chicago, tells how the superintendent of a telephone company solved the difficulty arising out of complaints of poor service by installing an automatic Monitor System, which provides a telephone at the superintendent's home and at his desk, allowing him to cut in at any time and listen to all his operators at any time without their knowing he is on the line. A copy of this circular will be sent upon application to the company.

A National Association of Purchasing Agents.

E. B. Hendricks, temporary secretary and treasurer of the new "National Association of Purchasing Agents," which was organized in New York City last month, now has a membership of over 100 purchasing agents and buyers representing some of the largest industrial corporations, railroads, steamship lines, street railways, gas and electric companies in New York, New Jersey and Connecticut. It is said that several hundred others have signified their intention of becoming members at the next meeting, which will be called toward the end of November.

At the last meeting H. T. Leeming, of Thomas A. Edison, Inc., was elected temporary chairman and E. B. Hendricks, P. O. Box 1406, New York City, organizer, temporary secretary and treasurer.

The association will be devoted entirely to the interest of purchasing agents and buyers, and will have sub-associations in all sections of the country. Some of the objects are the formation of the purchasing agents and buyers into a national body, mutual acquaintance and the resulting privilege of exchanging ideas and opinions, the standardization of purchasing routine and methods, the investigation and certification of new appliances and materials, the improving of existing methods for the diffusion of market information, the gathering and dissemination of data relating to the subject of buying, the standardization of specifications, and other features that will probably be suggested in the future that will be of benefit or interest to the purchasing agent or buyer.

Paragraphs.

H. E. Waterhouse of the Coffey System & Audit Co., Indianapolis, Ind., is starting upon a three months' trip abroad. He will visit London, Glasgow and Liverpool, renewing old acquaintances among the telephone people there. He was formerly, for 12 years, connected with the National Telephone Co. whose system was taken over by the British post office department.

Northwestern Electric Equipment Co., 185-189 East Fourth street, St. Paul, Minn., has issued the November number of its house organ, The Northwestern Buzzer. One of the features of the number is an illustrated article regarding the tests of dry batteries during manufacture. The company is breaking ground for a new building and an insert is published showing halftone views of the work in progress.

Meeting of Eastern Pennsylvania Association.

The second quarterly meeting of the Eastern Pennsylvania Independent Telephone Association will be held in the Park Hotel, Williamsport, Pa., on November 19, at 10 a. m. Several matters of considerable importance will be discussed and it is urged that every one who can possibly do so be present.

The executive committee requests that all the Independent telephone companies in eastern Pennsylvania and adjoining states be represented by some offiicial of their company. An invitation is also extended to the members of the Western Pennsylvania Independent Telephone Association, as well as to the Independent telephone companies operating in western Pennsylvania, to be present at the meeting.

New Exchange of United Telephone & Telegraph Co.

A new $50,000 telephone exchange which is being installed by the United Telephone & Telegraph Co. at Chester, Pa., is nearing completion. It is stated that when the new exchange is put in operation early in December the company will have one of the most complete exchanges in that section of the state. The switchboard is a common battery multiple switchboard and is being installed by the Dean Electric Co. Joseph Lodge, who is installing the plant for that company, is quoted as stating that it is the most up-to-date telephone plant that he has assisted in installing during the years he has been in the business. The system will have a capacity of 3,600 telephones.

Condensed News Reports

Officers of Companies are Earnestly Requested to Forward Us Promptly All Financial and Other Statements as Soon as Issued, and Any Items of Interest as to Their Plants and Systems

Personals.

F. V. NEWMAN has been chosen secretary and treasurer of the Michigan Independent Telephone & Traffic Association to succeed W. S. Vivian, who resigned to accept the secretaryship of the recently-formed Independent Telephone Association of America. Mr. Newman began his telephone career as office boy in the Detroit exchange of the Michigan State Telephone Co., with which he was identified for 17 years, becoming assistant manager of the exchange. In 1901 he was transferred to Jackson, Mich., where he held the position of manager, and later he returned to the Detroit office in the capacity of office manager. In 1905 he severed his connections with the Michigan State company to become assistant general manager and auditor of the Citizens Telephone Co., of Grand Rapids. For the past year and a half Mr. Newman has been manager of the Dallas Automatic Telephone Co., of Dallas, Texas, from which position he recently resigned to return to Grand Rapids. Mr. Newman's wide experience in official positions in the telephone operating and accounting fields well qualify him to fill the most important position in the organization which has done so much for Independent telephone service in Michigan.

F. V. Newman.

F. A. HAZELTINE, vice-president and director of the Willapa Harbor Telephone Co., of South Bend, Wash., has resigned.

HALL L. BROOKS, of Tomahawk, Wis., one of the well known pole producers, was a visitor at TELEPHONY's office last week.

ROBERT MCWHORTER, of Seattle, Wash., has been appointed manager of the Willapa Harbor Telephone Co., of South Bend, Wash., to succeed A. J. Peverstorff, resigned.

ARTHUR A. NOEL, for nearly four years superintendent of the Fall River Automatic Telephone Co., of Fall River, Mass., has resigned to accept a responsible position with the Automatic Electric Co., of Chicago. Prior to his departure he was presented with a handsome gold watch and chain by the directors in token of their regard for his faithful service.

DR. ALEXANDER GRAHAM BELL, who is now experimenting with hydroplanes, figures prominently in an article "By Auxiliary to Baddeck, A Single-Handed Cruise Along the Nova Scotia Coast and Through the Bras D'Or Lakes," by William Washburn Nutting, which appeared in a recent issue of the "Motorboat." Many telephone people have the impression that Mr. Bell has been dead a number of years, but the article in "Motorboat" indicates that he is very much alive.

CLARENCE E. LINZ, vice-president of the Dallas Automatic Telephone Co., of Dallas, Texas, recently returned from a several weeks' visit in England and the countries in continental Europe. Mr. Linz states that he found the nationally-owned telephone lines and railways to be inferior in service to the privately-owned systems of the United States. He also observed that in Paris the telephone is only used when absolutely necessary, for instance, if the person with whom a man wished to speak was anywhere within walking distance, he would always prefer to go out and find him rather than attempt to talk over the telephone. In Paris, he stated, which has a population of about 3,000,000, there are not as many telephones as there are in Los Angeles, with only 400,000 population.

New Companies and Incorporations.

FORT VALLEY, GA.—The Fruit Belt Telephone Co. is being organized by R. E. Brown, Max L. James, N. H. Baldwin and others.

ARBON, IDAHO.—The Falls-Bannock Telephone Co. has filed articles of incorporation with $4,000 capital stock. The incorporators are: T. B. Evans, D. J. Bowen, H. Bailey, John C. Cairns, J. E. Keeler, William Allard and David B. Ripley.

EQUALITY, ILL.—Articles of incorporation have been filed by the Equality Independent Telephone Co. with $5,000 capital stock. The incorporators are: Isaac White, John M. Berry, Jesse M. McLain, Joe G. Bunker and W. A. Ardelott.

FORTVILLE, IND.—Articles of incorporation have been filed by the Alfont Telephone Co. with $330 capital stock. The directors are: C. Ifert, J. K. Rash and N. Elsberry.

PRESCOTT, IOWA.—The Prescott Mutual Telephone Co. has been incorporated with $9,900 capital stock. W. D. James is president.

FREEPORT, KANS.—The Freeport Telephone Exchange Co. has been incorporated with $630 capital stock by H. S. McDaniel, of Argonia, E. H. Smith, of Bluff City, W. B. Howe, C. A. Schmidt, W. T. Moyer and E. A. Salser, of Freeport, and J. P. Woods, of Anthony, Kans.

HOGUE, KY.—The Big George Telephone Co. has been organized by George Adams, and Adam Dick, of this city.

WATERLOO, MICH.—The Weneeda Telephone Co. has been incorporated with $5,000 capital stock by Lynn N. Gorton, Orville Gorton, and Orson Beeman, all of Waterloo.

VIENNA, MO.—Articles of incorporation have been filed by the Maries County Independent Telephone Co. with $5,000 capital stock. The incorporators are: Geo. E. Chandler, H. E. Calvert, and J. H. Chrisman.

RIVERSIDE, WASH.—The Riverside Telephone Co. has been incorporated with $1,000 capital stock by A. W. Campbell, C. E. Blackwell, Hugh Miller, G. K. Cooper, H. M. Fryer, R. L. Grounds, and W. K. Halsey, all of this city.

IRON RIVER, WIS.—The Iron River Water, Light & Telephone Co. has been incorporated with $25,000 capital stock. The incorporators are: T. F. Mackmiller, Alvena Mackmiller and L. H. Callahan, all of Iron River.

TIGERTON, WIS.—Articles of incorporation have been filed by the Comet Telephone Co. with $1,000 capital stock. The incorporators are: J. R. Riendl, Chas. F. Neumann and Ed. Bauer, all of this city.

Construction.

PHOENIX, ARIZ.—Plans are being drawn by the Mountain States Telephone & Telegraph Co. for rebuilding its system in the valley and for extending the system in this city.

JACKSONVILLE, FLA.—Plans have been completed for the erection of a new exchange building for the Home Telephone Co., in this city, to cost approximately $30,000.

HOMER, ILL.—The Douglas County Telephone Co. will erect a new exchange building in this city.

PRESTON, MINN.—The Standard Telephone Co. is planning to rebuild and improve its entire system.

DILLON, MONT.—The Centennial Valley Telephone Co. will make a considerable number of extensions to its system.

BINGHAMTON, N. Y.—Plans are being completed by the New York Telephone Co. for a new exchange building in this city.

ALEX, OKLA.—The Alex Telephone Co. is planning to remodel its plant and install a new switchboard.

OKLAHOMA CITY, OKLA.—The Pioneer Telephone & Telegraph Co. will extend a line about 15 miles in length through Osage county.

CAMP CROOK, S. D.—Jacob Ridgway has purchased the telephone plant in this place and will make a number of improvements in the system.

EDMONTON, ALTA.—About $2,000,000 will be spent by the government in telephone extensions and improvements. New exchanges will be built in this city and Medicine Hat.

PENANG, STRAITS SETTLEMENTS, EAST INDIES.—An American consul in Singapore reports that the legislative council of the Straits Settlements recently appropriated $6,244 for improving

certain telephone lines in Penang, which are owned and operated by the post office department of the Straits Settlements, and are under the supervision of the postmaster general at Singapore. The exchange at present consists of 495 telephones.

Elections.

ETNA, CAL.—The annual meeting of the Siskiyou Telephone Co. was held recently and the following officers were elected for the ensuing year: A. Dannenbrink, of Gilta, president and superintendent; H. Dannenbrink, of Weaverville, vice-president; M. C. Beem, of Fort Jones, secretary; C. L. Willard, Jr., of Etna Mills, treasurer and general manager.

ARCOLA, ILL.—At the annual meeting of the stockholders of the Arcola, Grain, Coal & Telephone Co., the following directors were elected: Joseph Coombe, W. G. Baker, and Ford M. Righter. The board of directors elected officers for the ensuing year as follows: President, John I. Hall; vice-president, Joseph Coombe; secretary, treasurer and manager, Fred F. Munson.

ATKINSON, ILL.—Dell German, of Burns township, and S. R. Rishel, of Cambridge, Ill., were elected directors for three years by the stockholders of the Henry County Telephone Co.

HILLSBORO, ILL.—At the annual meeting of the Peoples Mutual Telephone Co. the following directors were elected for the ensuing year: Ben Stead, of Pitman township; Charles Schwab, of Litchfield; W. E. Morain, of Irving and E. N. Pray.

IPAVA, ILL.—The Ipava-Summum Farmers Telephone Co. held its annual meeting recently and elected the following officers for the ensuing year: President, H. O. Robinson; vice-president, Charles Plate; secretary, B. F. Bricker; treasurer, Nicholas Weber. Martin Wickert was elected to directorate.

JACKSONVILLE, ILL.—At the annual meeting of the Illinois Telephone Co. the following directors and officers were elected for the ensuing year: Directors, John R. Loar, Edward P. Kirby and A. P. Grout; president, John H. Loar; vice-president, Edward P. Kirby; secretary, Hart A. Withee; treasurer, W. W. Ewing; general manager, Willard W. Holliday.

MORRISON, ILL.—The Whiteside County Farmers' Mutual Telephone Co. held its annual meeting recently at which officers and directors for the ensuing year were elected as follows: President, J. S. Burns, of Fenton; vice-president, J. H. Martin, of Morrison; secretary, F. Trautwein, of Morrison; and directors, R. S. James, of Morrison, and E. A. Likes, of Fenton.

COLUMBIA CITY, IND.—The stockholders of the Whitley County Telephone Co. held their annual meeting recently and elected the following directors for the ensuing year: S. J. Peabody, J. D. Adams, Mrs. W. H. Magley, William Pogue, Fred Morches, W. F. McNagny, W. F. McLallen, Ben Raupfer, Alvin R. Kreig and Robert Weiner. The directors then met and elected the following officers: President, S. J. Peabody; vice-president, James D. Adams; treasurer, Mrs. W. H. Magley; secretary and manager, William Pogue.

BLUE SPRINGS, NEB.—The Gage County Independent Telephone Co. held its annual meeting recently and elected the following officers for the ensuing year: President, J. H. Mc Pherson; vice-president, G. F. Harpster; secretary, F. F. Roderick; treasurer, R. B. Clemens. W. E. Walker and W. E. Reed were elected directors to take place of retiring members.

FREMONT, NEB.—At the annual meeting of the Farmers Telephone Co., the following officers were elected for the ensuing year: President, Fred A. Howe, of North Bend; vice-president, John Drengus, of Scribner; secretary, C. L. Kelly of North Bend.

MILLERSBURG, OHIO—At the annual meeting of the Millersburg, Wooster & Orroville Telephone Co. for the following officers and directors were elected for the ensuing year: President, C. M. Lovett; vice-president, F. L. Beam; treasurer, W. F. Carey; secretary and manager, M. M. Herron; directors, F. L. Beam, of Mt. Vernon, H. M. Rudy and W. F. Carey, of Millersburg; H. H. Strauss and D. F. Griffith, of Orroville, T. E. Steiner, of Marshallville; Otto Troutman, of Shreve; F. M. McCoy and C. M. Lovett, of Wooster.

SCOTTDALE, PA.—At the annual meeting of the stockholders of the Fayette Rural Telephone Co. the following officers were elected for the ensuing year: N. R. Lyons, president; John Truxel, vice-president; Ernest Overholt, secretary, and Albert W. Truxel, treasurer. The directors are: Abram Truxel, A. W. Truxel, Charles Truxel, John D. Truxel, William R. Bungard and Ernest Overholt.

SOMERSET, PA.—At the annual meeting of the Somerset Telephone Co. W. F. Murdock, of Johnstown, was elected secretary and treasurer, and Edwin D. Schade and Chas. Griffith, of Johnstown, were elected directors.

FREDERICKSBURG, VA.—The Fredericksburg & Wilderness Telephone Co. held its annual meeting recently and elected the following officers and directors for the ensuing year: Thos. F. Morrison, president; Dr. Frank Morrison, vice-president; P. R. Pemberton, secretary and treasurer; W. L. Landrum, B. T. Hall, Dr. W. A. Gordon and William Thorburn, directors.

Financial.

HILLSBORO, ILL.—The stockholders of the Peoples Mutual Telephone Co. have voted to increase the capital stock of the company from $15,000 to $30,000.

JACKSONVILLE, ILL.—At the annual meeting of the Illinois Telephone Co. a semi-annual dividend of 4 per cent. was declared, payable November 20.

LENA, ILL.—The Pearl City Independent Telephone Co. has filed amended articles of incorporation, increasing its capital stock from $15,000 to $45,000.

MCLEANSBORO, ILL.—The McLeansboro Telephone Co. has decreased its capital stock from $10,000 to $3,500.

BLUE SPRINGS, NEB.—At the annual meeting of the Gage County Independent Telephone Co. a 5 per cent. dividend was declared.

TROY, OHIO.—The Troy Telephone Co. has applied to the Public Utilities Commission for permission to increase its capital stock in order to take care of improvements made and proposed.

SOMERSET, PA.—The Somerset Telephone Co. held its annual meeting recently at which the usual quarterly dividend was declared.

ELCHO, WIS.—The Elcho Telephone Co. has filed an amendment to its articles of incorporation, increasing the capital stock of the company from $1,000 to $5,000.

Franchise.

BLYTHE, CAL.—S. D. Kamran has been granted a franchise to construct and operate a telephone and telegraph system in this city for a period of 50 years.

NEW CANTON, ILL.—The village board has granted a 25-year franchise to G. L. White to operate a telephone system in this village.

Underground.

SAN DIEGO, CAL.—The Pacific Telephone & Telegraph Co. has improvements under way to its system in this city, which will cost approximately $100,000. This includes the laying of underground cable to cost more than $30,000, and two additional toll lines between this city and Los Angeles.

SPRINGFIELD, ILL.—A committee of business men has asked the city council to have the wires of the Central Union and Interstate Telephone companies placed underground in the business section.

COUNCIL BLUFFS, IOWA.—The Independent Telephone Co. is planning to lay about two miles of underground conduit in some of the principal streets of this city.

RALEIGH, N. C.—The Southern Bell Telephone & Telegraph Co. contemplates underground extensions in this city.

Miscellaneous.

GIRARD, ILL.—E .S. Sterrett, of Henry, Ill.; C. B. Cheadle, of Joliet, and A. G. Hawley, of Clinton, Ia., have purchased the properties of the Girard Telephone Co., of Girard, Ill., the Virden Home Telephone Co., of Virden, Ill.; the Gillespie Home Telephone Co., of Gillesie, Ill., and the telephone properties at Benld, Ill. A. T. Vaniman, formerly owner of the Girard plant, will act as manager of the Girard company.

POLO, ILL.—The Polo Mutual Telephone Co. has taken over the exchange and properties of the Rock River Telephone Co. in this city.

TIPTON, MO.—A. T. Adams recently purchased the properties of the Moniteau Telephone Co. at public auction for the sum of $10,000.

BATAVIA, N. Y.—The Batavia Home Telephone Co. has sold its holdings to the Federal Telephone & Telegraph Co., of Buffalo.